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Psychology and the New Education

Under the Editorship of

GARDNER MURPHY

PSYCHOLOGY
and the New Education

REVISED EDITION

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Preface to the First Edition

This volume might be called an experiment in subject matter. It is an attempt at a sweeping reorganization of the usual treatment of educational psychology. The aim has been not so much at a systematic presentation of psychological data and theory as at maximal usefulness in contributing to the understanding of educational problems. In consonance with this aim, the usual arrangement of topics has been departed from whenever such a step seemed desirable. Certain topics and much data common to texts in the field have been omitted. Much material not hitherto readily available for use in teacher training has been added.

Entire chapters largely new to this subject have been introduced. Thus a chapter on the social psychology of the school years aims to combine modern work in social psychology and child study so as to bring out the importance of the child's social development throughout the school period. Modern studies of play, of reading and "movie" interests, of motivation and incentive are brought together to give an interpretation of psychological dynamics which should have multiple educational applications. Physical growth is treated not merely as physiological background; rather there is emphasis upon growing as a psychological experience and upon the manifold ways in which a child's physique and physical maturity affect his place in "child society." Similarly, there is emphasis on the subtle ways in which a youngster's health may affect the development of his personality and the direction of his interests. A chapter on the study of the individual child tries to bring together all this various material in such a form that the teacher will see not merely traits but individual, living children. Finally, a chapter on general training attempts to go from the work on transfer to a consideration of the development of methods of work, character traits, attitudes, aesthetic sensitivities, and thinking.

Conventional in name, but hardly so in treatment, is a discussion of emotion in which emotional stress is presented as evidence (like fever in physical disease) of some difficulty of adjustment which the teacher must diagnose and remedy. The discussion of memory stresses modern work on the permanence of school learning over considerable periods of time, and the effects of schooling on attitudes, prejudices, and interests.

Not only is there gross reorganization of the material in order to make the treatment more practical and functional for teacher training, but, throughout, this practical and functional point of view markedly affects the selection of material. The discussion of learning begins not with the escape of cats from a box, but with a "field study" of children cooperating in the solving of a puzzle. The learning curves show progress in school subjects. And the forgetting curves show forgetting not of nonsense syllables, but of arithmetic, history, chemistry. The writer does not question the value of animal experimentation or work in the psychological laboratory. But he feels that educational psychology should deal with children, and the learning of school materials, in school; he feels also that the subject has now progressed far enough that it can develop its topics in terms of its own subject matter. And the quest for materials relevant to this larger purpose has extended into clinical psychology, psychiatry, sociology, and research on classroom methods and the curriculum, when such ventures seemed desirable for a more adequate understanding of the subject in hand.

With such changes in material and organization, the inclusion of psychological matter of a controversial character seemed undesirable. Thus the concept of instinct is eliminated without debate. The treatment of learning may seem suggestive of a gestalt point of view, while in other places there is what may seem a naïve and uncritical use of the concept involved in the "law of effect." The instructor may bring in a greater refinement in the discussion of such topics, if he wishes. But the purpose of the text is pragmatic: to give a clear and straightforward interpretation of the facts under discussion in such fashion as to be of the greatest possible service to a teacher. Doubtless there has resulted much oversimplification of treatment. But the writer would prefer such a result to a treatment so balanced or elaborate that it left a teacher in confusion on issues where she must, for practical purposes, adopt some point of view.

One attitude which pervades the entire volume is so fundamental as to require special emphasis. The writer is very much of an environmentalist. He does not question the importance of "original nature." But he feels that the trend of modern work warrants stressing, again and again and again, that an individual's interests, abilities, character, are a product of the total environment in which he develops. To an extent not suspected even ten years ago, society is responsible for what each child becomes. And the school can make a child or break him, bring him happiness or utter misery. Throughout the volume the writer has tried to arouse in the reader an appreciation of the teacher's responsibility, and of her marvelous opportunities.

Much use is made of illustrative incidents and anecdotes. And the reader is frequently asked to recall, from his own experience, illustrations of the point under discussion (the instructor will find written assignments along this line to yield much fascinating material). Such anecdotes and reminiscences should make the material more interesting. They should aid in applicational transfer, so that the student may make some use of his educational psychology when he begins teaching.

But there is a still more important purpose, fundamental to the entire treatment. It is the hope that this concrete material may make the reader see, behind each generalization—children. At least the reader's reminiscences of his or her own childhood will, it is hoped, show that the book aims not to give a cold knowledge about pupils but rather a warm, sympathetic understanding of teachers and children and the things they do together. The writer has much sympathy with his friends in progressive education when they complain that educational psychology tends to mechanize aand dehumanize education. By such illustrative devices, by such broadening of the treatment as has already been mentioned, by the general attitude throughout, he has tried to avoid this criticism, and to develop a sensitivity to child problems and an enthusiasm for the teacher's art.

Certain obligations remain to be mentioned. The writer wishes, first of all, to acknowledge his debt to Dr. H. B. English for the careful reading of the manuscript, and for many valuable suggestions. He is also obligated to the members of some seventeen committees on which he has served in the revision of the curriculum of the College of Education at the Ohio State University, and in particular to Doctors H. B. Alberty, R. D. Bennett, W. W. Charters, H. G. Good, and W. G. Reeder, of the Committee on Required Professional Courses, with whom he has worked on the application of curricular techniques to these courses. He has tried to coordinate the volume with the best thinking in the various fields of teacher training, and in certain respects it is a product of the efforts and tribulations of this committee. Most of all he is indebted to the graduate students who have, during the past ten years, carried on research with him on problems of professional education; the book is primarily the product of this ten-year program aiming at the development of a course in educational psychology which should be founded on educational experimentation and exemplify the principles which it teaches.

May, 1933 SIDNEY L. PRESSEY

Preface to the Revised Edition

The ten years since Psychology and the New Education *was published* have seen three changes that especially make a revision desirable. In the first place, in this decade there have emerged even more clearly than before a dynamic, integrative concept of child development, and a mass of material supporting and illuminating that concept. There has, in the second place, gradually evolved a larger dynamic and integrative concept of learning. Both concepts appeared in the 1933 edition (perhaps the writer may be pardoned the hope that that edition contributed its bit in fostering these two advances). But so much work along these lines has been done in the past ten years that utilization of that work, and certain reconstitutions of treatment in the light of it, seemed desirable for a follow-through if for no other reason.

In the third place—affecting everything and assuredly presenting new problems and obligations and opportunities as regards the preparation of teachers—has come the war. Surely every thoughtful person recognizes that the war is not simply an episode after which things will return to "normalcy," but rather a crisis point in the history of our civilization. Through such a change, science cannot remain aloof; and certainly there is the obligation of everyone concerned with education (most of all, with teacher education) to rethink his work in terms of relationships to these tremendous events.

In congruence with these general points of view, the revision more specifically has involved the following changes (besides practically complete rewriting and utilization of new source material throughout). There has been great stress upon social development and upon recent work having to do with group structure and social dynamics; the space devoted to the "social psychology of the school years" has been more than doubled in length, and the subject has been given the emphasis of two chapters. The point of view regarding emotion has been reconstituted, with recognition of a recent work on frustration, and a complementing of this concept with a concept of furtherance with successful carrying through of motivation which it is believed may prove of both theoretical and practical value. A chapter on the development of attitudes, character traits, and value concepts has been added, to recognize the vital importance of the school's responsibility in these respects. And the treatment of learning has been reorganized, stressing the relation of learning to the individual's total constellation of attitudes, interests, and feelings, and also to the social situation in which the learning is occurring. The chapter on the hygiene of work includes discussion of the teacher's own problems of mental health and adjustment. Later chapters expand two topics distinctive in the first edition. The effectiveness of schooling is measured not so much by tests as by real-life outcomes as regards health habits, social adjustment, vocational success, citizenship. An entire chapter is given to the neglected but all-important problem of "applicational transfer," or carry-over of schooling into out-of-school life. Final emphasis is thus given to the theme that the school's work must be seen in relation to the community, and the total existence of those it serves.

Besides the above gross changes there have been shifts in emphasis and scope. The attempt has been made to see development through the first twenty years into young adulthood, not simply to sixteen or eighteen. Since the majority of young people are going to high school and many into college, and since the entire developmental period needs to be seen as a whole, such extension of years covered seems desirable and useful. Material has been drawn from a greater variety of sources than before. More use has been made of research with pre-school children to show the early stages of certain problems, and of investigations regarding out-of-school youth and also school-community relationships in an attempt to see the work in educational psychology in a broader perspective. And there is reiterated emphasis on the fact that the home, community, and school are all inextricably interrelated in influence upon a child's development and learning. Even greater stress than in the first edition has been put upon the psychology of the teacher; her personality is a major factor in the classroom, and her welfare is of importance in its own right—presumably also a matter of interest to those preparing to teach.

Treatment of learning emphasizes modern project and activity programs and evaluation of schooling in terms of out-of-school behavior rather than simply tests in school. More stress is put upon the ways in which an individual acquires skill in getting along with others, forms attitudes, and develops ideals, and proportionately less attention is given to the learning of subject matter. Throughout there has been a con-science regarding the larger obligation of education—and of educational psychology—to contribute in every way possible toward solution of the multiple and almost overwhelming problems of these times. In large part they are educational problems, and in large part they are due to failure of the education of the past. The problem now is so to educate young people that they can live together cooperatively and effectively, avoid mass frustration and aggression, have socially desirable attitudes, think clearly, and seek sound values. In the effort to make such educational gains, educational psychology *should* play a major part.

In the revision many people have had a hand. The many graduate students who have served as part-time instructors under the writer's supervision in teaching the first course in educational psychology, and in carrying on research regarding such teaching, have in total contributed much. Dr. Cornelia Doty, Dr. Robert Fischer, Dr. R. M. W. Travers, and Captain Nicholas Hobbs have each written the first draft of one or more of the revised chapters. Dr. F. P. Robinson has taken major responsibility for revision of the second part of the volume. Final responsibility for points of view, organization, and form of statement throughout rests, however, upon the writer of this preface.

SIDNEY L. PRESSEY

Columbus
November, 1943

Psychology and the New Education

CHAPTER I

The New Psychology and Educational Reconstruction

There are reasons on every side to warrant the conclusion that, as a result of changes under way for some time but greatly hastened by the war, psychology is being largely reconstituted. And already multiple evidences point to the direction of these trends. Now psychologists are talking of frustrations and their effects on individuals and on nations. They are following the effects of world events on attitudes, and constantly checking on public thinking by polls. They are investigating the ways in which children work together in different kinds of society and considering the effects in the Army, in industry, and in the community of various conditions of morale. Abroad they have seen propaganda reshape the minds of millions, and subtle governmental policies redirect the development of youth. Psychology is no longer confined to the laboratory; it is out through the world. And sooner or later it will enter education in new ways and with a new vigor. What will these new ways be? The following suggestions are ventured:

New Orientations Concerning Development

Of greatest importance is this fact: concepts regarding human development have been extraordinarily enriched over what now seem the superficial understandings of a few years ago.

In the first place, recent research regarding physical growth is showing much more clearly than heretofore the interrelation of physical growth and growth of personality. Continuing studies of the same individuals over a period of years as regards the complex and marvelous changes in physique from infancy to maturity, and coincident detailed observation of changes in each youngster's behavior have revealed relationships formerly obscured by averaging or by roughness in methods of investigation. The new knowledge of psychological development is founded on new knowledge of physical growth and change.

A second contribution of recent years to the understanding of human development concerns emotional dynamics. Not intellectual but emotional growth and change have come to be seen as of central importance. A young person's feelings, not his understandings—and feelings which he himself usually does not at all understand—are the forces which really move him and which determine the direction in which he moves. Usually these forces are quite as uncomprehended by the adults who have contact with him. But if a teacher *can* understand them, she gains insights into her pupils' problems which are invaluable.

In the third place, there is increasing emphasis on and understanding of social development through childhood and adolescence, and also the effects of the total social and cultural environment on development. The distinctive fact about a human being is after all not that he is a biological organism; the distinctive fact is that he is a social being. His growth is not so much a physical as a social growth. The world he lives in is not so much a physical as a social world. And the newer studies of what may be called the social psychology of childhood and youth are therefore important not only for their originality and their remaking of that topic. They have much broader import—they must be considered also in connection with study of the growth and change of interests and ideals, and of the total personality.

Finally, in psychology and also in the world everywhere, there has come to be a new appreciation of the importance of attitudes and ideals and concepts as to value. To no person is the world a flat, colorless, undifferentiated mass in which everything is of equal worth. Everyone regards certain people, things, and ideas favorably and opposes others, considers certain acts right and others wrong, some things beautiful and others hideous; there may be some ideas and ideals to which he would devote a lifetime or even give his life. The development, through childhood and youth, of attitudes and ideas as to what is right and beautiful and true is indeed a topic of importance —a topic the comparative neglect of which, in both psychology and education, has been unfortunate indeed.

Part One of this volume attempts to present a sweeping picture of the total process of human development through the first twenty years, with special emphasis on the topics mentioned above, and with every bit of the material chosen for its possible helpfulness in dealing with common educational problems. It begins with a discussion of problems of physical growth and of health, as they are important for understanding a youngster's total personality. Then follows consideration of growth of abilities and of interests. The next chapter presents, by concrete anecdote and summary of research, the newer points of view regarding emotional development. Much space is given to the fascinating newer studies of child and adolescent society. An attempt is made to show something as to how attitudes and ideals, standards of conduct, and aesthetic standards develop through the school years, and how the school may influence that development. The last chapter of this section tries to bring all these topics together so that the reader may obtain some conception of the total richness and infinite variety of development manifested in individual young people, as shown by case studies of actual persons representative of various types with which a teacher may have to deal. It tries also to give a new appreciation of the integrated wholeness of each personality; each child's strengths or weaknesses of physique or intellect or emotion are not isolated phenomena, but operate in a dynamic combination, in the persisting efforts of that young person to achieve status and reach goals.

The limits as well as the range of treatment should be made clear. Development is considered only over the first twenty years, and with emphasis on the years when most young people are in the elementary and secondary schools. But development and change do not stop at 18 or 20. For many young people the college years present serious problems. If the student goes away to college, this may be the first experience away from home for any length of time; freshmen are often more miserably homesick than first-grade children on the first day. College society is likely to be more sophisticated and more competitive than the social life in the home town; serious difficulties of adjustment may arise. Ideas are met which disturb religious and moral attitudes and cause conflicts as regards ideals and standards of conduct. This volume touches upon the problems of these years, but only relatively briefly. Development does not stop even with graduation from college! Multitudinous difficult adjustments usually need to be made during the first year of work. A young man or woman of 23 may be in sundry respects still very immature. Throughout adult life there are continuing psychological changes and developments of various sorts, even into the decline of old age. The school should see the sweep of the total process in perspective; it might do much to avert later crises.

The teacher has great need for such a psychology of adult life. She needs understanding regarding the changes and maturings through which she herself will go. Certainly the young teacher is often a very different person at the end of her first year of teaching from what she was at the beginning.

Adjustment to certain other teachers and to principal and superintendent may not have been easy. There may be a most unfortunate professional disillusionment. And if she remains in teaching? How the unmarried woman may order her life so that she does not become morbidly lonely and embittered is surely a major problem of human welfare in the modern world. But a teacher has many contacts with other adults. The young widow whose only child is just beginning school, the child of middle-aged parents about to get a divorce, the older teacher upset by the menopause, the principal in his sixties—each presents psychological problems. With certain phases of what may be called the psychology of the teacher this book will briefly deal. But most of these problems in the psychology of adult life cannot here be considered.[1] Their existence and their importance must not be forgotten, however, or the fact that psychological development and change do not stop at 20 but are continuous throughout life.

A Reconstitution of Concepts Regarding Learning

In the past dozen years, understandings regarding human development have thus been in large part remade. And so also have concepts regarding the nature of learning. The work of the modern teacher has in consequence been almost infinitely increased in scope and possible fruitfulness over what the teachers of a generation ago attempted to do.

In the first place, it must be clear that for the work of the school to be effective, the pupil must be adequately understood in terms of such knowledge of his development as has been mentioned above. What is this boy's maturity of abilities and of interests? An "interest age" of 12 and interests of a 15-year maturity need very different school programs. Are there emotional distresses or enthusiasms which may affect his learning? Is his work in school really determined by some background social situation? Lack of status with his fellows may make one boy completely neglect study and another apply himself grimly in a compensatory effort at least to make good with his teacher. What are the basic attitudes and value concepts which determine the direction and the real nature of each pupil's learning?

The learning which went on in the old schools was piecemeal and superficial and apart from the pupil's real life—a droned half-learning of facts in history, uncomprehended characters in literature, or memorized theorems in geometry. Facts and skills do have to be learned, but they are now being learned more efficiently. Many other things are being learned in addition: health habits, good taste in dress, skill in reading the newspaper and judgment in appraising what is read therein, acquaintance with the jobs available in the home town when schooling is finished. The modern school is much concerned that pupils should learn to get along with other people and work cooperatively with them. It is greatly concerned that its students should acquire desirable attitudes, ideals, and standards of conduct. These manifold learnings must be considered. In comparison, the old learning of a few facts and skills from much-thumbed textbooks seems inadequate indeed. Similarly inadequate was the old psychology of learning in comparison with the newer studies which take account of learnings thus varied.

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[1] An attempt systematically to deal with them will be found in *Life; a Psychological Survey* (S. L. Pressey, J. E. Janney, and R. G. Kuhlen, Harper, 1939.)

But with the broader concepts regarding both child development and learning must come recognition that the environment of learning is larger than the schoolroom. It is almost as if the school walls disappeared and the classes found themselves out in the neighborhood. The learning situation becomes not simply the child hunched over his desk under the threatening eye of the teacher. The total situation in which the learning takes place (and which greatly affects it) involves first of all the other members of the class and their relations with each other as well as with the teacher. But teacher and pupils are all in the community and constantly affected in innumerable ways by its customs, attitudes, and ways of living. All are living in an American culture which shapes their thinking to an extent of which they probably have no recognition. The newer concepts of learning recognize the great and pervasive effect on learning of the total learning situation, broadly conceived as described above.

If child development and learning are thus broadly conceived, the outcomes of the school's efforts must be appraised by methods as broad. No longer is it adequate to test progress in learning simply with a piece of paper and a pencil, or questions back and forth in the classroom. The real test of the effectiveness of the learning becomes practical and realistic: What does the learner do in those situations and under those conditions for which the learning was intended to prepare him? What health habits does he actually follow? How does he get along with others? What does he choose, when problems of value appear? Newer concepts of learning require newer means for determining the results of learning; and to these means some attention must be given. And as stress is put on such effects of schooling, it comes to be realized that a special and largely neglected problem of learning must be met if these are to be obtained. To teach health so that children do take better care of themselves, or history so that they are not scornful of the Polack family down the street—here are problems of "applicational transfer" far more difficult and more important than the teaching of Latin so that it increases a student's English vocabulary. These problems will be especially stressed.

The second part of this volume attempts very broadly, along the lines mentioned above, to summarize modern points of view regarding learning. Again the approach is practical. Concrete material is presented which shows how learning progresses and what the newer experiments in learning are like. The effects of praise or blame and of classroom morale upon learning, the factors involved in errors and ways of dealing with them, the causes of restlessness and fatigue in school, the comparative efficiency of different methods of study, the amount which high school students remember of a subject a year after they have taken it, the extent to which health education actually does reduce the frequency of pupils' illnesses, the effects of character education on honesty and of school music on adult musical interest—these are some of the topics dealt with.

Again certain limits of the discussion should be mentioned. Problems of learning in the pre-school child are quickly passed over. And problems of adult learning and of efficiency in adult life are only briefly touched upon, with special reference to the teacher's own problems of efficiency and mental hygiene in work. Again, problems of adult life need more attention. Adult education has its own problems of motivation, class morale, and methods in learning. Parent education, school publicity, changes in community practices like rationing—all present problems of adult learning. But these last matters cannot be dealt with in this volume.

PSYCHOLOGY AND THE RECONSTITUTION OF EDUCATION IN THE POST-WAR WORLD

The causes of the war may well be considered largely psychological and educational. Profound feelings of frustration in great nations, fumbling ignorance and misunderstanding, subtle programs of propaganda, hypnotizing morbid leadership engendering perverse ideals, education which misled or which bumbled and shirked its responsibilities—from such backgrounds did the war come. Against the recurrence of such happenings there should be every possible guard. To prevent such sweeps of psychological pestilence in the future and to nourish young people in a healthy development resistive to such disease seem as clearly a task for psychologist and educator as the task of the medical man in restoring physical health and vigor throughout the world. Emotional morbidity must be understood and guarded against. People must learn how to think clearly and to find values and aspirations which foster cooperative living. They must really learn how to live cooperatively together. These are all tasks for education. And to the understanding and the effective carrying through of these tasks psychology must make a major contribution.

This book as it now stands has been written with the feeling of responsibility that it should do its bit thus to contribute. The purpose of this introductory chapter is first of all to indicate to the reader the overall structure of the book, and the nature of its subject matter and professional point of view. But most of all its purpose is to stress this larger responsibility that everyone preparing to teach should feel. Now, more than ever before, there is a "race between education and catastrophe." There is no more important occupation in the world now than teaching. The good teacher must have a scientific understanding of her work. She must have a vision of its paramount importance.

PART ONE

Development Through the First Twenty Years

CHAPTER II

Physical Growth and Change

The most important, most helpful, most deceiving, most confusing, most neglected fact in education is growth. Most important, because the first consideration throughout the school years should be that healthy growth be achieved; most helpful, because the plasticity and vigor of the growth period offer multiple opportunities for education; deceiving, because education is constantly mistaking for its own accomplishment what has really come about through maturing; confusing, because growth involves constant change; neglected, because it is so obvious and yet so subtle.

Growth in intellect, personality, and character can be adequately understood only in relation to physical growth. To appreciate the fundamental biological character of growth in intelligence, the similarity between the curves for growth in intelligence and in physique should be noted. Only after consideration of the physiological changes going forward in childhood and adolescence can one come to full appreciation of the profound changes in interests and attitudes occurring in this same period. Anomalies of physical development are the explanation of many a "problem child."

For a child, the fact that he is constantly growing and changing is not simply a fact; it is an experience, presenting to him very difficult problems. Moreover, since in his world physical size and prowess play a large part, the growth which he has achieved determines in large degree the group of children with which he will associate, and his position and prestige in that group. In the adolescent period physical growth may, and usually does, present manifold embarrassments to the youngster of either sex. It is not easy for the grown and relatively stabilized person to realize how bewildering it is to be growing, especially since these problems of childhood and youth probably once caused him so much unhappiness that he now does not wish to remember them.

The concrete significance of differences and changes in physical size will be clearer if the reader will recall their bearings on his or her own childhood and adolescence. He may remember how very big adults seemed

—how big even children in the fifth grade appeared—when he was in the second grade, or how awkward and immature he felt as a high school freshman in comparison with the seniors. It is also well to recall cases one has known in which growth factors have played a large part in a child's life. One school had the bright boy whose ambitious parents pushed him ahead in school until he was with others against whom he was so helpless in play that he became a diffident recluse; the exceedingly tall boy who withdrew completely from games with his fellows because he literally could not compete on a level with them; the stupid sixth-grade bully who tyrannized because he had been held back in the grades among boys too small to fight back successfully; and the slight youngster who worked himself into physical and emotional exhaustion trying futilely to make good in some form of athletics. Then there was the girl, small for her age, who became the pampered pet of both the teacher and the other girls in her class, and the big raw-boned girl who was acutely unhappy because she was so tall and large that most of the boys did not want to dance with her. If the reader will look back critically at his or her own adolescence there will probably emerge unpleasant recollections of bewilderment and anxiety over the changes of puberty. Very likely there was embarrassment over sleeves and trouser legs that had become too short, accentuating wrists and ankles proportionately too thin, with hands and feet too big. Perhaps there was awkwardness that caused accidents at dinner table or in classroom, a voice that broke at inopportune times, teeth and nose too prominent in a childish face, a downy beard that was not enough to shave but too much to escape comment. All too likely the maturing of the sex organs was an event about which the surprised youngster had not been adequately informed, and which was regarded with fear and shame as something abnormal. Anyone who has forgotten these manifold difficulties involved in merely growing should carefully review his or her childhood and youth by glancing at such books as Tarkington's *Seventeen,* Sherwood Anderson's *Tar: A Mid-West Childhood,* or Leonard's *The Locomotive God,* noting the importance of physical changes as a background against which the story unfolds.

To begin the study of educational psychology by a consideration of physical growth is, then, of twofold value. Some understanding of the background physiological factors involved in psychological development is thus obtained. And the peculiar and difficult psychological problems presented to a child because he is physically a growing and changing organism can thus be systematically studied.

GROWTH IN SIZE

Most elementary of all data regarding growth are measurements of height and weight. In a given child size is only a rough indication of his stage of growth. But massed data on height and weight tell much about the course of growth and the relation of various factors to growth.

Curves of Growth in Height and Weight.—The total sweep of the growth process is well shown by Chart 1, which gives curves of growth in height and weight. The curves indicate a rapid growth in infancy, a slower rate in middle childhood, an upsurge at adolescence—more noticeable on the curves for weight—and an adult leveling off toward 20 for the boys, earlier for the girls.[1]

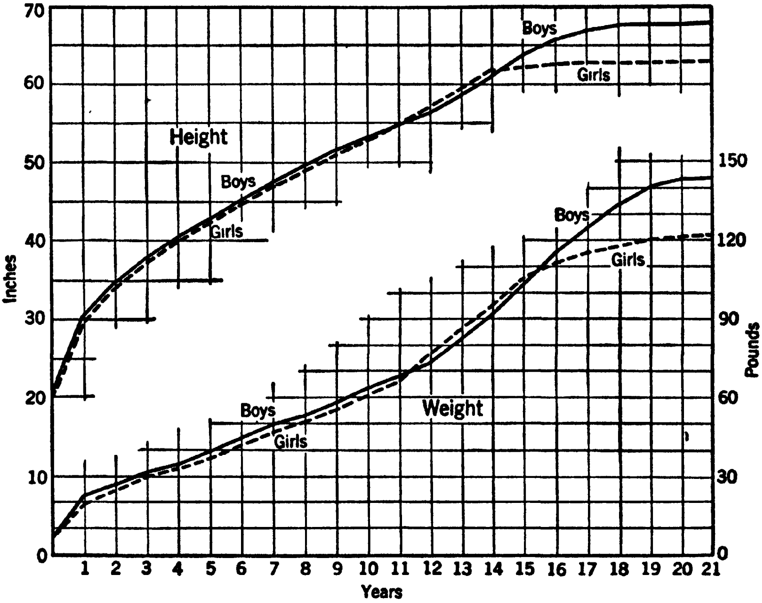

Chart 1.—Growth in height and weight from birth to 21 years. (Adapted from Baldwin [2], Davenport [12], and Burgess [7].)

The magnitude of the total growth process through the years, and especially in adolescence, must be emphasized. Thus over the twelve years from 6 to 18 boys increase over one-half in height and over three times in weight. The powerful nature of the forces of growth and the insistency of the demands of the organism as regards food, exercise, sleep, and other factors involved in physical well-being can hardly be overemphasized. Little wonder that there are times in the lives of many children when—very likely to the distress of their teachers—the youngsters seem to be preoccupied with merely growing. Variations in rate of growth at different ages and the size of the adolescent acceleration are well brought out in Chart 2, which shows not the height and weight at each age, but the gain in each year.

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[1] Most books dealing with child development or adolescence treat of growth only through 16 or 18. Wherever possible, this volume presents data showing growth through 20 or 21. This is done partly because now for a large portion of American young people the school years extend through 20, partly because it is desired that the data should extend to include the average undergraduate reader. But the most important reason is this: only by such extension is the reaching of the adult level shown—with the sex differences clearly apparent—and the growth phase of the total life span really covered. It is important that this phase be thus fully described, and that the change in direction of the life processes be thus clearly indicated. This point is so important that it will be returned to at the end of this chapter.

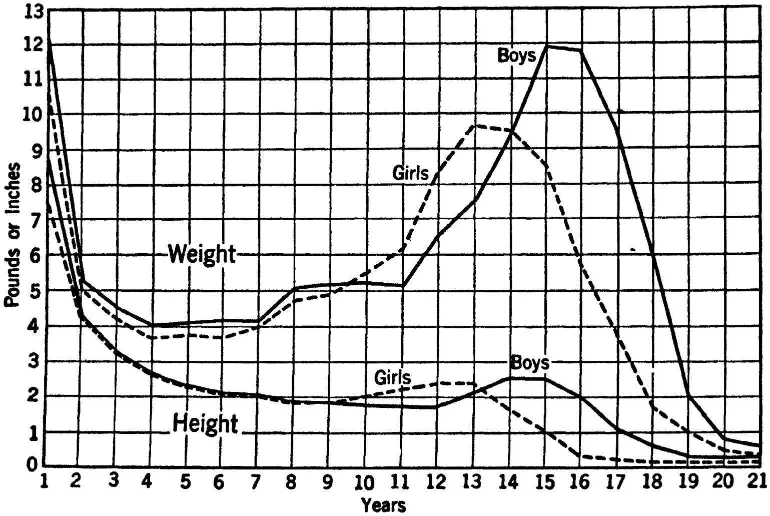

CHART 2.—Average gains each year in height and weight for boys and girls. One division on the chart equals 1 pound, 1 inch, or 1 year. The chart shows that from birth through the first year boys average 12.2 pounds gain in weight and 8.7 inches in height. They gain 5.2 pounds and grow 4.4 inches during the second year, etc. (Birth to age 3, adapted from Baldwin [2]; ages 4–18, from Davenport [12]; 18–21, from Stuart [44]; height, 2–21, from Burgess [7].)

Physical Size and "Child Society."—The great significance, for what may be called "child society," of these marked differences from age to age in physical size must be clearly understood. Childhood and youth are rough-and-tumble periods, and a youngster's position among his fellows is determined in large part by his physical size, strength, and vigor. In proportion as a child can associate and compete physically, he will achieve confidence and ability to get along with others and will have a happy or a miserable childhood. These differences of height and weight from one age to the next thus give chronological age a special significance in the associations of childhood.[2]

The pervasive effects of differences in physical size may be illustrated by the story of two brothers, one unusually large for his age, and the other not only a year younger but small for his age. As far back as the younger one, James, could remember, his brother had imposed on him, teased him, made him do the unpleasant chores—backing up his impositions by actual physical combat whenever James rebelled. By the time the two boys had reached adolescence James had been so thoroughly cowed that he did not dare drive the family car, have a date, or wear the kind of clothes he liked. He did somewhat poorer work in school than his brother, largely because his feelings of inadequacy became acute whenever he was faced with an examination. To compensate for his inabilities, James withdrew more and more from the social life of his fellows and developed a dream world in which he was the successful person he might have become in real life had he only been as large as his brother. It was not until his senior year in college that James began to study subjects that gradually showed him the source of his difficulties; he still remains shy and unsure of himself, and is frequently harassed by his earlier feelings of inferiority—the basis of which was a few inches less than his brother in height and a few pounds in weight, during his childhood years (4).[3]

Adult-Child Relationships and Size.—Almost wholly neglected in discussions of the psychology of childhood is the pervasive importance of the child's physical inferiority to adults. Even in their relations with one another, shrewd adults recognize differences of physical size and vigor as of subtle but very great significance. Thus the small man feels inferior and becomes either submissive or defensively aggressive; the man of powerful physique may be either domineering or patronizing. But physical differences between children and adults are even more marked (and are accentuated by multiple other differences of intellectual and emotional maturity and of prestige).

Adult-child differences in physique are strikingly illustrated in the remarkable series of photographs in Chart 3. The pictures show at regular four-year intervals the growth of a girl from one year of age to 17—taken each time with her father who thus serves as an adult standard of comparison. The smallness of the young child compared to an adult is obvious, as is the growth in size over these years. Notably well shown are the changes in proportion and total physical personality which also occur—a matter so important that the next section will be devoted to it. The little girl is plump and short-limbed; the 9-year-old is slim and boyish; adolescence has been entered by 13, and the 17-year-old girl is beginning to show the rounded fullness of young womanhood.

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[2] It is interesting to note here that the boxing world considers the increase of weight made by the average boy between 14 and 15—about 15 pounds—as more than sufficient to move a man from one boxing group into another, as from featherweight to lightweight. The average boy, between the ages of 14 and 17, puts on enough pounds to change a man all the way from a lightweight to a heavyweight. It must be remembered that 15 pounds is proportionately more in the youth than in the man.

[3] Figures in parentheses refer to the readings at the end of the chapter.

The young child is a pygmy among adult giants. Childhood attitudes of dependence, submissiveness, fear, or resentment, and adult protectiveness or domineering could hardly develop as they do if it were not for the crude animal fact of the child's physical inferiority. And it may be a very important factor in a child's attitudes in school. Whatever the relations between a 100-pound boy and a 200-pound principal, the mere difference in physical size is for both a fundamental factor in the situation. Some of the most obstinate cases of discipline in high school seem to have their root in the feeling of the youngster that he has at last grown to the point where he can fight back. A splendid feature of the modern school is this: that adult physical superiority is playing a smaller part[4] and is being supplanted by a feeling of mutual cooperation, friendship, and respect.

Sex Differences in Growth Rate.—It is also evident that growth proceeds at different rates for the two sexes. The maximum adolescent rate is reached by girls about two years earlier—around 12 to 14, as compared with around 14 to 16 for boys, as shown in Chart 2. From about 12 to 14, girls average both taller and heavier than boys. Shrewd observers of children know that there are interesting consequences as regards the social relations between the two sexes. The vigor and physical superiority of many girls during this period frequently bring participation (as never before or later) in boys' sports and amusements, and the development of a splendid physical confidence and poise. As a result, the boys either admit the girls to comradeship or else draw away from them and assume a scorn which seems in no small part a defense reaction—to which the girls respond by a great show of independence.

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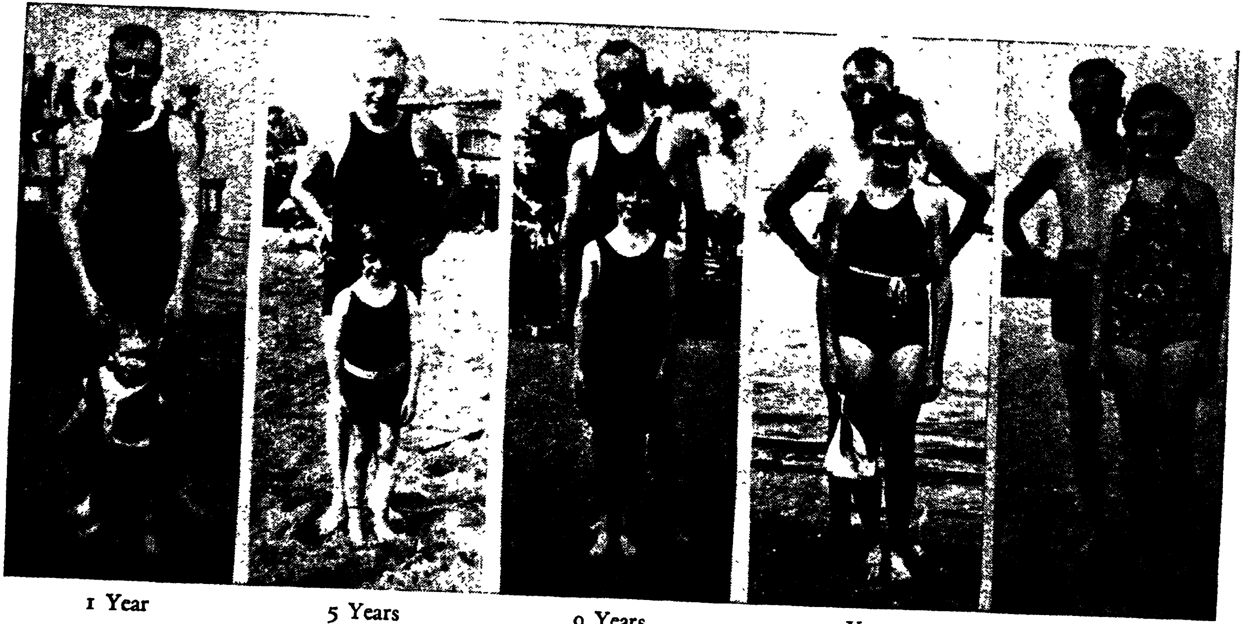
[4] It is interesting here to contrast the descriptions of childhood misery in the stories of Dickens and the Brontës with modern novelists' descriptions of childhood.



1 Year   5 Years   9 Years   13 Years   17 Years

CHART 3.—"Mr. Chadwick's little girl grows up." Growth of a girl, as shown by pictures at four-year intervals, the father serving in each one as a standard of comparison. (Pictures reproduced by permission of Mr. F. H. Chadwick and *Life*. For the above plate certain of the pictures were rephotographed so that the father was the same size in each picture, and the figures were aligned so that comparisons could be made easily.)

It should also be noted that throughout childhood girls appear to be on an average more mature physiologically than boys; even at 6 they are already about a year in advance, as shown by such evidence as the replacing of certain cartilages by bone. Although the point is in dispute, there is also evidence to indicate that puberty is reached by girls on the average about a year earlier than by boys. Adult leveling off in growth appears at about 17 for the girls are compared with 19 for the boys (the outcome being that by 20 men average over 4½ inches taller and 22 pounds heavier than women). Further, most intelligence tests show girls through the elementary school period to average slightly above boys of the same age. And in the secondary school the girls seem to show a greater sex-social maturity, as compared with the boys of the same chronological age. All these facts have a manifold significance for the schools; they present social, moral, and educational problems, the full import of which the average high school teacher seems not to realize. The average 16-year-old girl is physically and emotionally almost a woman, whereas the average 16-year-old male is often yet little more than a boy.

Relation of Growth Rate to Intelligence.—One other group comparison requires brief mention. It is a common belief that intellectually superior children are physically delicate or retarded in growth. However, investigations are almost unanimous in finding brilliant children to average somewhat superior in height and weight. Thus, Terman (45) reports a superiority of brilliant over average children in height of 1 to 3 inches at all ages (with a final height of at least 2 inches above the normal group), and in weight of 5 to 12 pounds (with an average final weight of at least 10 pounds more than the normal group). Intellectually superior children also tend to reach puberty at an earlier age. To move a bright child through school at a somewhat more rapid rate than the average child thus need not take him "out of his class" physically; rather it may put him more where he belongs as regards physique and physiological as well as social and intellectual maturity.

The assumption of physical delicacy on the part of the intellectually superior may be due in part to generalizing from the occasional extreme case, and in part to confusing real intellectual superiority with the studiousness and the verbal facility sometimes developed by the weak or sickly child as a compensation for his inadequacies in play and as a result of greater association with adults and more reading. In part it is due to the fact that educationally advanced children are in schoolrooms with children chronologically and physically older and thus bigger. And in part this assumption is perhaps a defense mechanism of the average and inferior person.

On the other hand, intellectually inferior children average inferior physically. Thus Wheeler (48) has found that dull children average 2 or 3 inches shorter and 5 to 8 pounds lighter per age than children of average ability. For both brilliant and dull groups the differences from

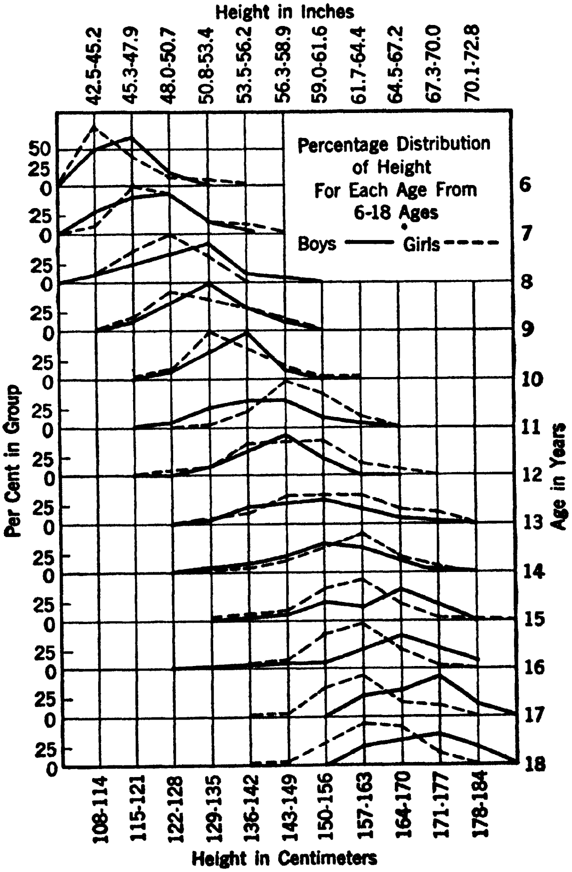


Chart 4.—Individual differences in the height of boys and girls at each age from 6 to 18. The chart shows that, for example, about 75 per cent of the 6-year-old girls are in the 108–114 cm. group in height, and that girls of this age range in height from 101 to 142 cm. (From Baldwin [2], p. 149.)

the average are small in early childhood but tend to increase as the children grow older, resulting in final averages of significance for the three groups.[5]

Individual Differences.—So far the consideration has been of averages. But in physical growth—as in connection with every other topic discussed in this volume—even more important than general trends is the fact that individuals may differ greatly from the average. Thus a group of 2276 boys 15 years of age were found to vary in height from 4 feet 8 inches, to 6 feet 2 inches; and in weight from 80 pounds to 161 pounds (2). Chart 4 shows distributions of weights of children from 6 through 18. A few boys at 7 are as tall as the shortest boys of 16.

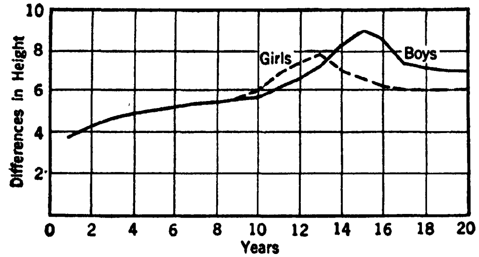


CHART 5.—Range (from 10th to 90th percentile) in height, ages 1–20. (From data of Burgess [7].)

Through the adolescent years (roughly from 12 through 16) the range is especially great, for reasons which will be returned to shortly. This fact is shown clearly in Chart 5. The difference in height between girls at the 10th and at the 90th percentiles[6] broadens from 6 inches at 10 years to 8 inches at 13 years, then narrows to 6 inches at 17. Boys show a similar spread two years later.

It may justifiably be inferred that such differences are in large part normal. Decided differences in height, weight, and other physical characteristics may be expected between youngsters of the same age; in consequence, care must be exercised before deciding, for instance, that a given boy is underweight, overweight, or otherwise abnormal in any unhealthy sense. Marked individual differences are also found in the total growth curves. The pubertal acceleration in growth may (as will be seen shortly) come at different ages, and a given child may show special times of growth, pause, or acceleration. However, individual curves for growth, especially in weight, may show certain fluctuations suggesting the operation of special factors such as ill health.

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[5] As further indication of the relation between lack of physical vitality and mental defect, the following facts may be presented concerning the life span of defective and normal persons: The normal male child of 2 has an average expectation of 56.8 more years of life; the male moron of the same age has an average expectation of 52.2 years; the average male imbecile, 29.6 years; and the idiot, 20.1 years. Two-year-old male defectives as a group have an average expectation of only 30.1 more years of life, or 26.7 years less than for normal babies (14).

[6] A 10th percentile means that 10 per cent of the group (in this instance the children of a given age) score at or below that level. And the score found at the 90th percentile would be equal to or greater than that of 90 per cent of the group. Chart 5 presents the differences between the scores representing these two percentile ranks at each age.

The fundamental question regarding each child is this: What is normal *for him?* Thus the mother of a rather short, slight child was much worried and stuffed him with food. Inquiry showed that both parents were short and slight—but in excellent health—and had in childhood been short and slight like their child. They were told to cease worry, that the youngster was entirely normal and healthy for his total build and constitution, that in fact statistics on health and longevity showed it was best to be a little under average in height and weight.

GROWTH AND CHANGE

It is certainly of importance that the average child triples his weight and adds 50 per cent to his stature during the years from 6 to 18, but the mere increase in size is by no means the most important feature of the growth process. Such striking changes occur that he becomes a different being. Every proportion of his body alters; there are also changes in the internal organs, in the processes of digestion and metabolism. The sex organs mature, the lymphatic system grows and then decreases, and there are subtle alterations in the composition of all the tissues. The organism not only enlarges; it is transformed. When this fact is taken into consideration in connection with the changes already shown in size, it is small wonder that the adult teacher and the child or adolescent frequently misunderstand each other. Nor is it surprising that many educational mistakes are made in providing for the child's learning.

Changes in Proportions of the Body.—Differences in the gross facts of total proportion were shown in Chart 3 above and are made more evident in Chart 6. It is evident that in the proportion of head to body, length of body in relation to legs—in fact, in all such respects—the child is different. Nevertheless, this chart does not show adequately these differences in appearance. The shape and proportions of the head may continue to change until the end of adolescence. During adolescence the features alter in ways that are often embarrassing; for instance, the shape and size of the jaws change and the nose becomes prominent. Pictures of a person in childhood, then in the teens, and finally in young manhood often show differences so great that one might often well doubt it was the same individual. As the child moves into adolescence there is a lengthening of the long bones of the arms and legs. Another skeletal change that is a repeated source of irritation is the development, then the discarding, of one set of teeth, the final dentition being completed only during adolescence, or even later.

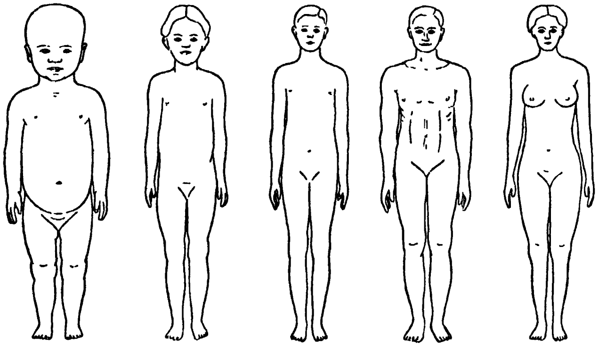

Chart 6.—Change in body proportions with age, and sex differences. (From Bardeen [3], pp. 490, 493.)

Changes in the Internal Organs.—During the school years there are not only outward changes in size and proportion but internal changes in every system of the body—muscular, digestive, circulatory, genital, nervous. The nature of some of these changes is exhibited in Chart 7. As shown there, the nervous system has almost reached the final gross size by the age of 12, the lymphatic system grows with great rapidity at first and then becomes actually smaller, the genital organs grow hardly at all until after the 12th year, and each of the various tissues of the body has a typical curve.

Whereas in the newborn child the muscular system constitutes about 23 per cent of the weight of the entire body, in the adult it is 43 per cent (42). The nature of the muscular tissue is somewhat different in child and adult. Moreover, muscular growth is not uniform; the muscles of the legs, arms, and back have growth curves of their own. Nor is muscular growth always perfectly coordinated with growth of the skeleton so that there may be, especially at the adolescent age, embarrassing awkwardness of movement.[7]

The striking growth and then decline of the lymphatic system is well exhibited by the chart; and since lymphatic circulation is largely dependent upon muscular activity, the need for a vigorous childhood is emphasized. Metabolism is more rapid in children than in adults. Accordingly, appetite is great. And especially is adolescent appetite marked, and often peculiar. Because of changes in internal chemistry involved in the physiological transformations of adolescence, plus the injudicious diet usually resulting from the adolescent's own selection

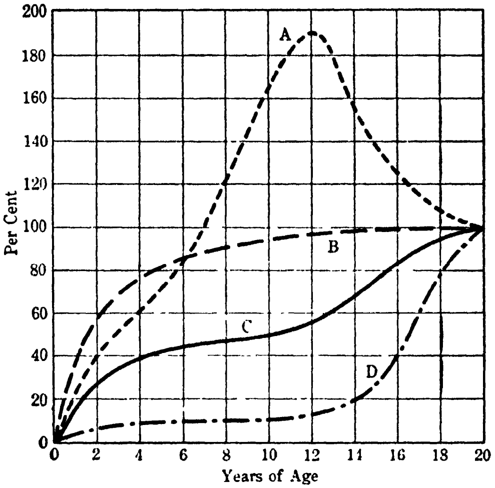

CHART 7.—The major types of postnatal growth of the various parts and organs of the body. The several curves are drawn to a common scale by computing their values at successive ages in terms of their total postnatal increments (to 20 years). (From Harris, *et al.* [24], p. 193.)

A. Lymphoid type: Thymus, lymph nodes, intestinal lymphoid masses.

B. Neural type: Brain and its parts, dura, spinal cord, optic apparatus, many head dimensions.

C. General type: Body as a whole, external dimensions (with exception of head and neck), respiratory and digestive organs, kidneys, aorta and pulmonary trunks, spleen, musculature as a whole, skeleton as a whole, blood volume.

D. Genital type: Testis, ovary, epididymis, uterine tube, prostate, prostatic urethra, seminal vesicles.

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[7] Even if there is no actual decline in neuromuscular coordinations some clumsiness might be expected merely from the rapid increase in size and change in proportion. Bigger feet and longer limbs take more room, and until this fact is learned, some knocking against things may be expected.

of foods, the boy or girl may have periods of indigestion, an unhealthy skin, and headaches.

Central and most important of all in this total process of change are the growth and maturing of the sex organs. The most significant date in the total period is the age of onset of puberty. Table 1 shows age of first menstruation of a group of mothers and daughters, and age of appearance of pigmented hair in the pubic region for two groups of boys, in 1908 and 1937. The great individual differences must especially be emphasized. Thus first menstruation may not uncommonly come as early as 11 or late as 15.

Of distinct interest is the evidence in this table to suggest that both boys and girls are now reaching puberty a little earlier than a generation ago. Such earlier maturing might be due to better nutrition and health in the present generation. Conceivably also the sex repression and lack of knowledge of sex a generation ago may have tended to retard healthy sex development; present-day movies and adolescent social life might tend to stimulate sex maturing.

TABLE 1.—Age of First Menstruation of 357 Mothers and 680 Daughters, and of the Pubescence of 1406 Boys in 1937 and 3835 Boys in 1908[8]

	Percentage at Each Age			
Age	Mothers	Daughters	Boys, 1908	Boys, 1937
9	1			
10	1	2		1
11	6	8	7	14
12	17	20	21	25
13	27	35	27	29
14	25	22	26	22
15	15	9	15	8
16	5	3	4	
17	2	1		
18	1			
	100	100	100	99
Mean	13.99	13.61	13.4	13.08

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[8] Adapted from (21) and (17). The criterion of pubescence for the boys is "the appearance of pigmented hairs in the pubic region" (17, p. 208). This criterion presumably marks an earlier stage in the total process of pubertal change than the very different criterion (first menstruation) for the girls, and thus accounts for the anomalous implication in the above table of earlier puberty for boys than girls. As already indicated, most other evidence shows girls to mature earlier than boys. Girls have more erupted teeth at each age, skeletal development as shown by ossification is more advanced, adolescent acceleration in growth in height and weight comes earlier.

Of great interest is the further finding that in general the taller and heavier children, and those who are healthy and from good neighborhoods, tend to reach puberty earliest. To these youngsters already bigger than their later-maturing fellows is then added the rapid growth just preceding and at pubescence; growth in weight at this period is usually double the growth during later childhood. Individual differences are thus greater at this time than ever before or in the ages immediately following, as shown in Charts 4 and 5, and include adolescent changes in proportion and tissue so that in total these differences are striking, as indicated by the boys of the same chronological age but at different stages of maturing shown in Chart 8.

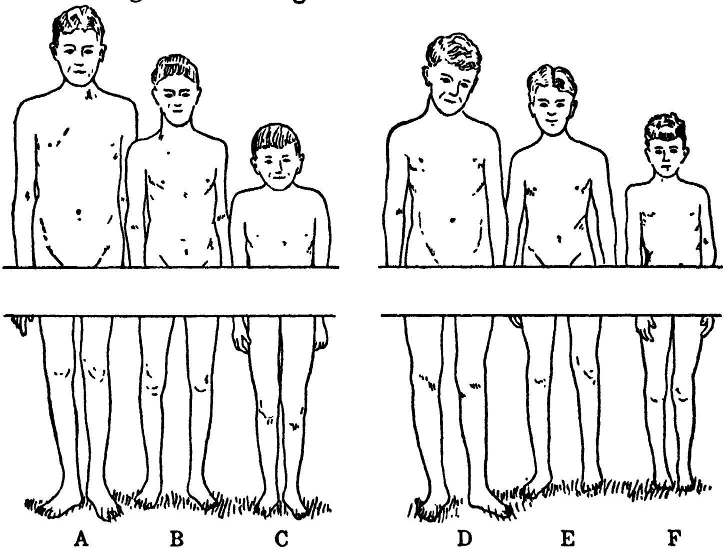

Chart 8.—A concrete illustration of individual differences in physical development. The three boys at the left (A, B, C) are 15 years of age. A is post-pubescent; B is pubescent, and C is pre-pubescent. The three to the right (D, E, F) have chronological ages in reverse order to their physical size. D is 13 years 1 month of age, and pubescent; E is 13 years 5 months of age, and pubescent; F is 14 years 6 months of age, and pre-pubescent. (From Dimock [17], p. 229.)

Consequent Educational Problems.—Clearly a high school teacher or a director of athletics has here a very difficult problem, all too often inadequately recognized. In the same class may be some small youngsters who are physiologically yet children, and others, usually much

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As will be seen later, interests seem to mature earlier. It thus seems reasonable to conclude that puberty is reached between one and two years earlier by girls than by boys.

taller and heavier, who are physiologically well on the way to maturity. The biggest may be not only twice as heavy and strong as the smallest of the same age but also sexually adult, with the build and voice and the sex-social interests of early adulthood; the smallest has the build, voice, and interests of a child. In sports, in reading and movie interests, and above all in social trends and problems of social adjustment these two are in different worlds. The relatively unimportant fact of chronological age may throw them together in school. Nowhere else in the educational system is such a difficult diversity to be found. Yet many high school teachers seem not to recognize these facts. And rare is the secondary school which has any consistent program for dealing with them. A school which rejects with indignation, on the ground that it would "get him out of his natural group," the suggestion that a bright child be moved ahead academically a little faster, usually has no scruples about keeping such adult and child pupils together.

DEVELOPMENT OF STRENGTH AND SKILL

Growth in physical size, in proportion, and in tissue has been briefly outlined above. The next question is concerned with development in strength and skill. Are increases in strength as remarkable as those in weight? Does strength as well as weight increase especially rapidly at adolescence? Is there a real motor incoordination at that time? Are individual differences in strength and skill as marked as in poundage? All these questions are of great importance. They are obviously so for programs of physical education and athletics. But evidence on these matters should also be of significance in many phases of the regular school program. For instance, too much may often be expected of young children in handwriting, art, and crafts. However, findings regarding growth in strength and skill should have still larger implications. They indicate development in functioning which might well be of some help in understanding the growth of more intellectual abilities and have some bearing on the growth of "intelligence." It therefore seems strange that educational psychology has not given more attention to this topic.

Chart 9 indicates growth, over the school years, in a simple skill (rate of tapping with a pencil stylus on a metal plate), and a simple act of strength (grip of the right hand). The chart shows the average boy as doubling his rate of tapping from 16 to 18, and in the ten

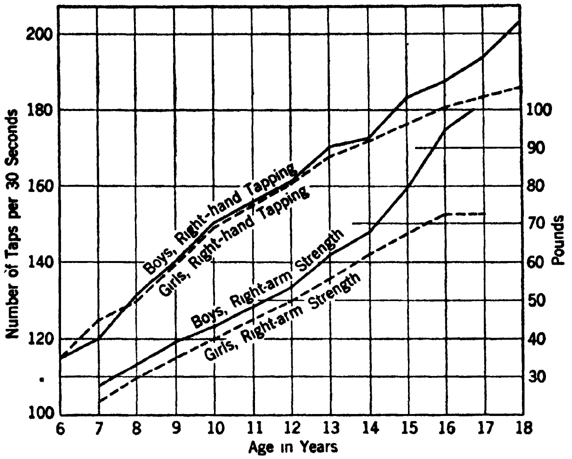

CHART 9.—Growth in strength of arm and rate of tapping, boys and girls. (Adapted from Baldwin [2], and Brooks [6].)

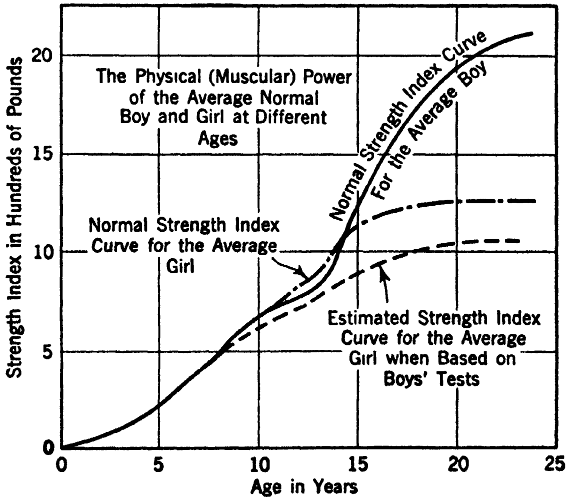

CHART 10.—Growth in general muscular power as shown by rise in average strength index through childhood and adolescence. The strength index was based on seven tests: lung capacity in cubic inches, strength of right- and left-hand grip, strength of back, strength of legs, strength of arms in extension and in flexion (38).

years from 7 to 17 he more than triples in strength of grip. Here are two elementary findings emphasizing the extent of development over the school years, findings which should constantly be kept in mind in planning school programs.

Rate of tapping and strength of grip are simple elements in the total of physical efficiency. May not some measure be obtained which involves more varied acts of strength and evidence of physical ability? Chart 10 summarizes findings from an effort to obtain a general measure of "muscular power."

Indices of physical strength were obtained by combining the results of seven physical tests such as lung capacity, strength of back, legs, arms. The combined result of such a series of tasks might be considered to show general physical ability in somewhat the same fashion as the total score on many different questions in tests of intelligence gives an indication of an individual's general mental ability. Such tests of strength and skill have been given to many thousands of young people of various ages. Chart 10 shows growth of physical efficiency as determined by these tests.

The course of growth in strength and skill is similar to the curves for growth in physical measurements such as weight. Again the total growth over the school years and particularly at adolescence is great; the boys' strength index doubles in the four years from 13 through 17. As adulthood is reached, male muscular superiority becomes greater. Presumably much of this greater strength of the male is a constitutional difference between the sexes. However, there are some results to suggest that feminine inferiority is becoming less, as a result of increase in physical sports for girls and other opportunities for healthy development.

That individual differences in physical strength and skill are great need hardly be mentioned. Table 2 shows the percentages of a group of 13-year-old boys with different strengths of grip and, in the line below, similar results for a group of boys 18 years old. At each age, the strongest is about three times as strong as the weakest. At 18 the weakest is no stronger than the average at 13; one 13-year-old boy is distinctly stronger than the average 18-year-old.

Clearly, athletic abilities among children of a given age will be exceedingly various. At any given age, strength and skill and size will differ so much that different sports seem obviously needed for persons of various physical abilities. Play involving children of different ages, as in a one-room country school, must obviously be of a sort in which

TABLE 2.—Percentages of Groups of Boys 13 and 18 Years Old Showing Different Strengths of Grip of the Right Hand[9]

Age	Pounds of Pull																	
	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	M
13	3	8	19	*40*	12	9	5	3					1						37
18				1	2	5	5	14	21	*16*	14	9	5	3	2	1	1	1	65

boys and girls who differ greatly in strength and skill can participate. Also to be expected are great differences in ability in handwriting, typing, sewing, shopwork. The young child will on the average be much inferior to the older child. But the teacher of young children who is distressed by their crude and clumsy work can find comfort in the fact that the processes of growth and maturation will in their own good time bring improvement. As will be seen in a later chapter, she can usually do little, as by intensive training, to hurry that development, somewhat as she can do little to hasten the child's growth in height. She can only help him to attain such strength and skill as is natural for him at his age, and (the most important point) keep optimal the conditions for his growing. As will also be seen later, "intelligence" appears to grow and reach an adult level in somewhat the same fashion; at each age there are great individual differences in mental "strength."

FACTORS INVOLVED IN PHYSICAL GROWTH

The school years are thus a period of extraordinary growth and change in size, proportion, biochemical constitution, strength, and skill. What are the factors influencing this development? In particular, what conditions may retard healthy development, and what may be done to remove such handicaps and further desirable growth?

Biological Constitution.—Indubitably the most important factor is the marvelous biological constitution which brings it about that individuals do develop in an ordered, coordinated, and basically similar fashion. Certain conditions, as of nutrition, may hamper or further this development; yet under ordinary conditions growth goes forward in its own way and in its own good time, surprisingly independent of circumstances. Weight increases, proportions change, strength and skill grow, in accord with these fundamental facts of growth; educational programs must also keep step. It is not possible, for instance, to train babies to walk before their neuromuscular systems have developed to the point where they are ready for this activity. Somewhat as extra food cannot make a baby grow faster than a "normal" rate, so extra practice will not bring progress in such skills beyond what the organism's own processes of maturation permit. Talking comes only with the proper maturation. Perhaps a certain stage of maturation has to be reached before a child can learn to read. This problem of maturation will be returned to later.

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[9] Data modified from (39). The careful reader may catch the fact that medians in the above table (given to the right and their position in the distributions indicated by italics) are much lower than those indicated for the same ages in Chart 10. The discrepancy is probably due to different types of apparatus and method. Table 2 is derived from English findings obtained some time ago.

In gross, human beings are thus alike and develop in similar fashion. Nevertheless, as already emphasized, individual differences are relatively great. The first factor to be mentioned as causing them is individual differences in constitution. Some people are "naturally" tall and others short; some fortunate men and fewer women can eat all they wish and never grow stout, whereas others take on fat with even a relatively moderate diet.

As racial characteristics are inherited by the race, so individual differences in constitution are inherited in the family. Tall parents tend to have tall children; the individual who never has to worry about taking on excess weight probably had a father who was similarly blessed. Color of hair and eyes, shape and size of chin and nose and head, physical strength and energy (also temperament and mental abilities) are all more or less clearly recognized as tending to run in families. Thus the heights of fathers and sons have been found to correlate .51, of brothers .51, of fraternal twins .64, of identical twins .93 (31).

However, it is also commonly recognized that sons may differ markedly from their fathers, and usually do differ considerably; a correlation of .51 shows that the father-son relationship averages as only rough; occasional extreme differences are possible. In part these differences, as well as the similarities between father and son or between two brothers, are to be accounted for genetically; each son inherits traits not only from the mother as well as the father but also from the grandparents and other more remote ancestors. These elements of inheritance will be different for two brothers (unless they are identical twins). Exceptional combinations may occur, producing exceptional individuals.

Physical Environment and Nutrition.—However, growth is not completely determined by inherited organic constitution, nor is individuality. The environment in which the growth takes place is also of major importance. Before the child is born the environment of the mother's body may be so affected by injury or gross disease as to affect the child's development. A birth injury may affect both physique and intellect. Later injury or such diseases as syphilis, tuberculosis of the spine, or poliomyelitis may very evidently affect development.

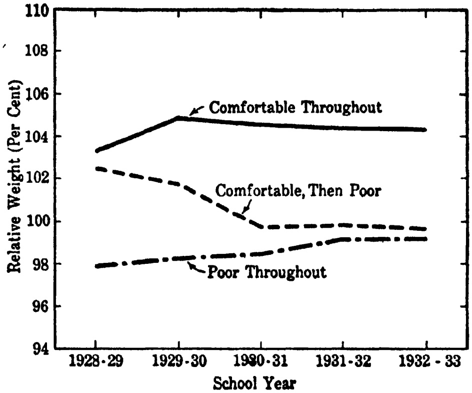

Chart 11.—Relative weight of children, aged 6 to 9, according to economic status of family: (a) family in comfortable circumstances throughout period; (b) family in comfortable circumstances in 1929, becoming poor by 1932; and (c) family in poor circumstances throughout period. ("Comfortable" means income of $250 or more per year per capita; "poor," less than this amount.) (From Palmer and Collins [33].)

More important in the number of persons involved and the effects on the well-being of the general population are diet and conditions of living. Thus in certain groups in France during the First World War, the growth of young children was retarded one or two years and of older children as much as four or five years, with marked delay in pubescence (49, p. 286). An investigation involving a total of about 20,000 German children in Leipzig showed an increase of 4 inches in height and 24 pounds in weight from 1918 to 1935, with an acceleration of over a year and a half in rate of growth (10). (The question at once arises as to what is now happening to the children in these countries!) Adolescent boys and girls in school average taller and heavier than youngsters of the same age who are working, and they reach maturity in size at least a year earlier than the working children. Elementary school children in slums have been found to average 3 to 5 inches shorter and 8 to 12 pounds lighter than children from good neighborhoods. Boys from one-room tenements of an American city averaged 2 inches shorter and 6 pounds lighter than boys from apartments of three or more rooms (49, p. 288). The skeptic may argue that working-class and tenement groups are constitutionally below more privileged groups in the total population. This may be one factor in the above data. But Chart 11 shows that when the depression reduced certain families from comfort to poverty, the weights of the children in these families fell off relatively, while in families who remained either comfortable or poor the weights of the children did not shift. Table 3 shows how the simple procedure of giving milk to undernourished children at recess brought about gains in height and weight over a similar group not so helped.

Table 3.—Average Increase in Height and Weight of Boys (a) Given Milk and (b) Not Given Milk[10]

	Height (in.)	Weight (lb.)
Milk group	1.47	3.62
Non-milk group	1.21	2.97
Difference	.26	.65

Since diet, living conditions, and medical care are now in general better than fifty or a hundred years ago, a somewhat more rapid physical growth and greater height and weight at a given age might be expected now than previously. Considerable scattered evidence supports this expectation. Measurements of the skeletons of medieval Englishmen have led to the conclusion that they are about 4 cm. shorter than Englishmen of the present (10). Of more immediate interest to the student reader will be this finding, that at Harvard sons of alumni are about 1¾ inches taller and 10 pounds heavier than their fathers; and in four eastern women's colleges the superiority of daughters over mothers was 1.1 inches in height and 3.9 pounds in weight—nevertheless, the daughters were more slender! (5.)

From the above findings it might be expected that immigrant groups which have come from very unfavorable conditions would here in later generations show improved physique, and this does seem to be the case. Thus Japanese children born and reared in America are larger than children of the same racial type in Japan; similar findings have been reported for immigrants from Europe.

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[10] The data are from (49), Part III, p. 431. They represent a total of about 1200 boys 5 to 14 years old in seven communities in Great Britain, and show effects of about one pint of milk five days a week over approximately seven months.

There is thus much scattered evidence to show that unfavorable diet and living conditions retard growth, delay adolescence, reduce height and weight for each age, and produce adults who are below what they might have been in physique. Undoubtedly such unfavorable environmental conditions cause not only smaller physique but less physical strength, energy, resistance to disease. And there is evidence that with improvements in living conditions and diet—improvements in which the schools have had a part and which they may do much to foster—accelerations of growth and improved physique have come about. To the modern teacher such findings should be of multiple significance. She is concerned with the physical as well as the mental growth of her pupils, and here is evidence that such growth may be furthered. But there are many very important psychological ramifications. As already emphasized, adequate physique is desirable if a child is to compete with and obtain status and confidence in his relations with other children. Energy and good nature are less likely in the stunted than in the well-developed child. The same is true as regards readiness in learning.

Psychological Factors Affecting Growth.—In a later chapter evidence will be presented that emotional distress, worry, or excitement interferes with digestion and elimination, disturbs sleep, affects circulation. Surely the inference is not unreasonable that emotional strain which was continued over a long period of childhood might affect growth. The marked retardations in growth in French and German children during and immediately after the First World War might well be in part a product of such factors (and the continuing air raids and destruction of the Second World War may well have such effects). The repressive school and home discipline and punishments of the past may perhaps have played a part in the small physique of past generations.

The lack of constraint, and the sympathetic furthering of child life which is characteristic of the best modern schools and homes—surely it is not altogether fanciful to suppose that such influences, operating cumulatively throughout a child's life, might further his physical growth. As explanation for the data showing puberty to be reached earlier now than a generation ago it was suggested that perhaps the less repressed and more informed present-day attitude toward sex (and perhaps the more frequent stimuli to sex feeling as in the movies and in teen-age social life) had played a part. Presumably psychological factors may operate not only negatively but positively to affect growth and maturing. The change in psychological atmosphere from cold repression to fostered freedoms of activity and understanding, and the great psychological stimulation from movies, radio, reading, social life—surely it is not too much to suppose that in total such changes might have not only psychological but even physiological effects.

And if there are such effects, then clearly a teacher should consider them in her attempts to understand individual children. A repressive, drab home might stunt the development not only of a child's personality but even of his physique. If his teacher can help this child, she may hope for improvement not only in his emotional and intellectual but in his physical well-being.

PHYSICAL GROWTH AND CHANGE AS THE FOUNDATION FACT FOR EDUCATIONAL PSYCHOLOGY AND EDUCATION

Physical growth is thus the great underlying biological phenomenon which must ever be held in mind if the facts of educational psychology are to be understood or its theories kept sound. The crude fact of the child's physical inferiority and immaturity is dominant in determining his status in his family and community and his concept of himself. His growth in size as well as in strength and skill calls for continuing readjustments in programs of recreation, handicraft, music, and art. The striking changes not only in size but also in constitution which accompany sexual maturing bring changes in interests and emotions which are a continuing problem to the youngster and those who have to deal with him. As will be seen later, the major and comparatively neglected fact regarding learning is the great increase in capacity to learn, with growth. The fact that conditions of living affect physical growth means that they, as a product of that fact, pervasively affect the growth of the total personality as well.

Clearly, then, educational programs must be congruent with growth. Lack of such congruence in school is the cause of major problems of educational ineffectiveness and discipline. Surely it is no dream to suppose that if the processes of growth and education can be brought harmoniously to work together, healthy growth will be furthered, and nature may thus support and further the efforts of education.

One further point must be stressed for perspective regarding physical growth through the school years, and as partial explanation for the school's difficulties in understanding and dealing with growing children. The growth years are a special phase of the total life span. Physical growth curves through 20 show that phase as ended; the curves fall over to a level. As a matter of fact, they soon do more than that; in the 20's they almost imperceptibly dip over into the slow decline which continues throughout the rest of life. An undergraduate reader of 20 is at the height of his growth curves. Around these years he is more healthy than he has been before or ever will be again. Death comes least often to this age and the ages just preceding than any others. In the 20's he reaches his greatest strength and skill. The 20-year-old reader may well feel that, physiologically, he is at the high point of his life.

From about 20 on, the nature of the physiological trends is very different from what it has been during the previous years of surging growth. This fact (and the larger fact that adult life is far different from life during the school years) makes it difficult for adults really to understand young people. Adequate perspective calls for consideration of development and change throughout the life span. The adult teacher should understand herself, and the differences between herself and her pupils;[11] she should see herself as well as her pupils in a total developmental perspective. The psychology of the tacher is a much-neglected, but very important topic. "My most difficult problem," remarked a high school principal, "is due not to the pubescence of our pupils but to the menopause of a teacher."

SUMMARY

Basic for any sound and adequate understanding of the development of interests, abilities, social adjustments, attitudes, character, and personality through the school years is an understanding of physical development. The major facts regarding physical development which are thus significant are as follows:

1. The extent of increase in size is indicated by the fact that in the twelve years from 6 to 18 the average boy increases over 50 per cent in height and over three times in weight. Evidently the young child is a pygmy among giants; attitudes of dependence or fear on the part of the child, and of protectiveness or domination on the part of parent or teacher, can in such a situation readily develop. Sex differences in growth rate have their correlate in attitudes between the sexes. Bright children tend to be somewhat heavier and taller than average children, dull and feeble-minded children smaller than average. Individual differences are marked; one 10-year-old child may be twice as heavy as another; a few 7-year-old boys are as tall as the shortest

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[11] In *Life: A Psychological Survey* (35), such a treatment of the entire life span has been attempted, with emphasis on the adult years.

16-years-olds. In play and physical competition such individual differences, and differences between younger and older children, are of great importance. And the total growth process is of such magnitude that important psychological correlates and consequences would be expected.

2. Different parts and organs of the body grow at different rates, and the total proportion and constitution of the body changes markedly over the growth years. The 20-year-old is not simply a larger person than the 6-year-old child; in proportion and internal constitution he is physiologically a different being. That he is a different being psychologically is obviously to be expected. Individual differences in amount, rate, and age of change may be marked; in the same high school class there may be a pre-adolescent boy and a youngster of the same age who is sexually mature—and probably also much heavier and taller. Evidently such situations create many psychological problems.

3. The average boy triples in strength of grip in the ten years from 7 to 17 and doubles his quickness as shown by tapping. His "strength index" doubles in the four years from 13 to 17. At a given age, the strongest boy may be as much as three times as strong as the weakest. Clearly such development and such individual differences in physical effectiveness are of great importance in athletics or any activity involving strength or skill, and are significant regarding the individual's total psychological development.

4. Growth goes forward under the impulsion and control of biological determiners which remain mysterious in essence. And individual differences are in part the product of individual differences in constitution which are also largely unknown. But research has shown growth to be clearly affected also by housing and other conditions of living, and by nutrition and disease. Hence the community and the school have a responsibility for healthy growth.

5. Physical growth is thus the foundation for and influences the nature of intellectual and emotional growth and the development of the personality. To be effective, education must be based on these facts. But education (and psychology also) should have a yet longer perspective—should see growth as one phase of the total life span. The special character of the growth experience, as compared with adulthood, will then be sensed. And the physiological backgrounds of adult mental life will be seen as playing their part in the total educational situation.

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CHAPTER III

Health and Psychology

Health is a major neglected topic in psychology, of pervasive importance. It should be obvious that a child who has defective and uncorrected vision or is deaf, malnourished, or ill cannot carry on his school work effectively. But other and less recognized results of handicap or ill health are often far more serious. Physical defect or illness is likely to affect energy and temperament; the child thus burdened may be apathetic or irritable and emotionally unstable. Many disciplinary problems are really health problems. Long-time effects upon personality, often determining the entire course of the individual's life, may result from childhood sickness or handicap. A crippled or underdeveloped or half-sick or blur-visioned youngster cannot participate in play on equal terms with normal children. Social isolation and feelings of inferiority may thus begin, and grow. At home a handicapped or sickly child may be indulged and become habitually dependent, or he may be resented as a burden and develop feelings of inferiority or bitterness. At school this same child may suffer from too much sympathy, from neglect, or even from unmistakable hostility (the handicapped youngster is often unattractive in both person and personality). And the teacher has the problem not only of her relations with the child but also of other children's relations with him, which may be similarly various. At adolescence all such problems may be intensified. The handicapped or sickly youngster may not be attractive to the other sex. Even minor defects or blemishes may become a matter of acute distress to a shy teen-age boy or girl trying to find his or her place in "heterosexual" society. It may well be claimed that the most serious consequences and the most difficult problems presented by physical defect or disease are usually not medical but psychological! Moreover, a later chapter will point out that sundry physical indispositions and illnesses are largely psychological in origin—the products of emotional strain and frustration.

Further, problems of physical defect and illness cannot be put to one side as involving only a few unfortunates. Careful estimates indicate that less than one-third of school children are free from physical defect (aside from one or two decayed teeth); one-third have minor physical difficulties, and the remaining third are seriously handicapped by ill health or defect of some sort (45). Each year about half the children in the average school have at least a minor illness (7). These problems occur in every classroom. They are in the background of many of the most persistent and puzzling difficulties of disinterest, discipline, and personality development faced by every teacher. A brief survey of the health problems of childhood and adolescence, with special reference to psychological relationships, is thus called for, if educational psychology is adequately to cover the problems of learning and development of ability and personality with which modern education is concerned.

PHYSICAL DEFECTS AND CHRONIC CONDITIONS

It was stated above that a considerable majority of children suffer from some physical defect. Chart 12 shows the frequency of various types of physical defect and chronic disease condition among school children. It is obvious that these defects vary in seriousness and may vary in degree. It must not be forgotten that often a child may suffer from several handicaps and that in fact defects often go together. Thus a child whose nasal passages are largely blocked by adenoids will be a mouth breather, may have defective tonsils and chronic nasal catarrh, is likely to have impacted teeth, and may develop middle-ear infection.

Sensory Defects.—Most obvious of the difficulties which affect schoolwork are sensory handicaps, and of these most frequent are the visual defects. Chart 12 indicates that about one-third of all children have some defect of vision. Many of these defects are slight, and a large proportion can be corrected with properly fitted glasses. But even in present-day schools regular testing of pupils' eyes may be lacking or inadequate, or glasses may not be provided or not worn.

Some years ago, while giving a group test to a fourth-grade class, one of the writers noticed a boy who went through each test at breakneck speed and then put his head down in his arms on his desk. The teacher remarked that she had tried in vain to stop this procedure, and added that the lad's work was slipshod and slapdash. He also would hold anything he was reading at arm's length—she had tried to make him stop that! He was occasionally truant. Inquiry of the child revealed that he had frequent head-

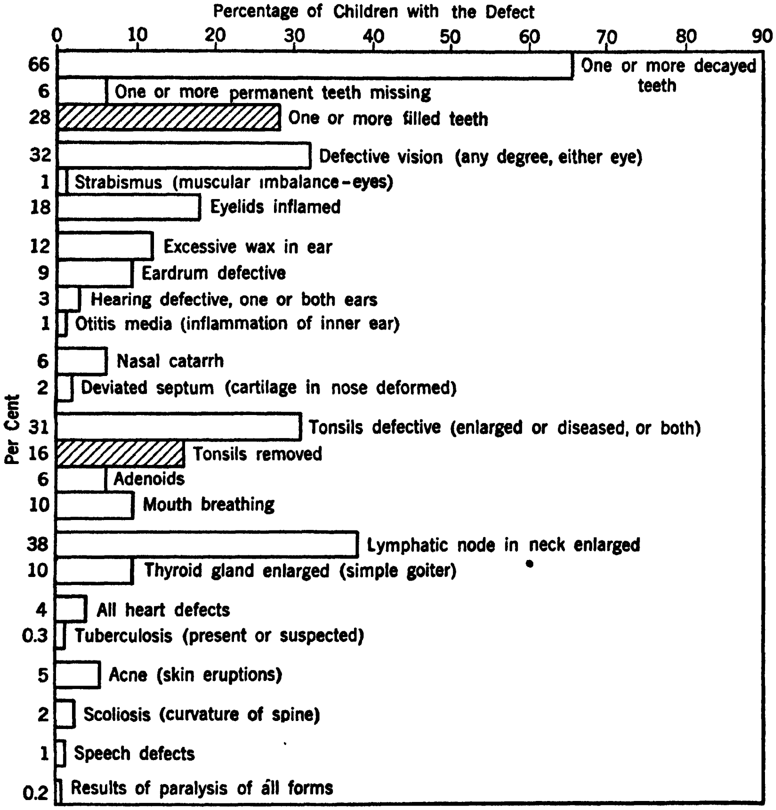

CHART 12.—Average prevalence of certain physical defects and diseases among several groups of white school children. In the case of two defects, frequency of treatment (teeth filled, tonsils removed) is shown by shaded bars. (Adapted from [43], p. 23.)

aches and occasional nausea (from eyestrain, though of course he did not know that this was the cause). The book at arm's length and the frequent brief rest periods were devices he had hit upon for minimizing his discomfort. And his teacher had stupidly tried to prevent him from thus getting what little relief he could. Small wonder that, what with the discomfort and the perverse nagging, he occasionally stayed away from school!

This boy was suffering from farsightedness (hyperopia or hypermetropia), the defect most common among children, and often missed in routine testing of the eyes with the ordinary visual testing chart because most cases can by special effort briefly force the lens of the eye into sufficient accommodation so that even near objects can be seen clearly. The boy described above had thus "passed" the perfunctory test of vision given in that school. But such cases cannot long maintain the extra effort; the eyes become uncomfortable from fatigue, and whenever the muscles relax, vision blurs.

Evidently glasses which will do the extra focusing necessary because of the defect (because the eyeball is too short) are needed. Teachers should be alert for evidences of farsightedness in classroom behavior, such as were shown by the boy described above—holding things at a distance, efforts to rest the eyes, complaint of visual discomfort or headache. When visual defect is suggested, a careful examination of the eyes should be arranged for.

The opposite condition of nearsightedness (myopia) is less often overlooked. The tendency to hold a book extra close is readily noted and its significance understood. And in routine tests of vision (as with the Snellen chart) the child cannot force his eyes into even brief adjustment for far vision; thus his inability to read smaller type at 20 feet is readily detected and the extent of the defect roughly measured. Further, since there is no extra effort of accommodation there is no extra visual fatigue or discomfort, headache, nausea, or other distress such as plagues the farsighted youngster. The farsighted child is thus more likely than the nearsighted child to be irritable, recalcitrant to school tasks, or truant. But the nearsighted individual has his own difficulties, and glasses (concave, to allow for the fact that the eyeball is too long) may make more difference in a youngster's life than might at first be realized.

For instance, one teacher, early in the school year, reproved a boy for leaving his seat and coming up front to read something on the blackboard. Instead of recognizing this symptom of nearsightedness for what it was, she resented the act as disturbing the attention of the other children. The boy was embarrassed and resentful. Thereafter when he could not read what was on the board he either made a whispered inquiry of a classmate, or guessed and made mistakes which were sometimes ludicrous and further irritated the teacher.

Fortunately about this time the parents took the boy to an oculist, his trouble was diagnosed, and glasses were obtained. The classroom difficulty cleared up at once; the boy could see adequately, and the teacher now knew what the trouble had been and was anxious to make amends for her former harshness. But the benefits reached much further. Upsets with his bicycle became less frequent now that he could see clearly where he was going. Now when he was downtown he could see at a distance what street car was coming and need not ask some impatient stranger—one had retorted disdainfully, "Can't you read?" Before he had seemed socially stupid; he did not recognize people or he missed the innumerable little cues of expression, gesture, or almost suppressed movement which often tell more than words. Now he began to catch on to such cues. Most encouraging to him was his improvement in sports. Now he could see a baseball when it came toward him; his batting and his catching became much improved. He had almost come to the conclusion that he was "just no good" in sports and tended to pull off by himself. He grew much more alert and very much happier. As his father remarked six months later, he seemed almost like a new boy.

Astigmatism is due to some irregularity in the curvature of the eyeball or the lens; this irregularity may of course appear with nearsightedness but it is more frequent with farsightedness. There is some astigmatism in the majority of cases of defective vision. Because of inability to get clear focus on anything the astigmatic person is likely to be restless and greatly handicapped. Glasses correcting this irregularity put clarity into a hitherto blurred and distorted world.

A fifth-grade girl had peculiar difficulty in reading. She would read ten or twelve words correctly, her head turned to one side and with an effortful frown, then suddenly produce a jumble of words partly from the page and partly from imagination. A careful examination showed that she had astigmatism which made it impossible for her to keep the total adjustment of position and focus that gave best vision for more than a few seconds. The whole reading process then broke down, and she continued what she had read with whatever words next occurred to her.

The eyeball may, then, be too long or too short, or its surface irregular, thus causing errors of refraction. These are the common difficulties. But there may also be difficulty with the muscles which control the eyes so that the two eyes do not coordinate perfectly; especially when the individual is not well or is fatigued there is visual discomfort, perhaps blurring, dizziness, or nausea. Muscular imbalance may cause loss of sight of the squinting eye. Cross-eyedness is both handicapping and disfiguring. As shown by Chart 12, inflammation of the eyelids (acute or chronic conjunctivitis and blepharitis) is common. In short, the eyes are a major health problem. An uncorrected visual defect may be a major handicap both in and out of school.

Diagnosis and treatment of such defects is a matter for experts. But here, as in other problems of health, teachers should be a first line of defense. In the first place, they should be alert to symptoms which suggest that reference to the doctor is needed. Some of these symptoms—holding a book closer or farther away than average, having difficulty with blackboard or map work, complaining of visual discomfort or headache after reading, making frequent attempts to rest the eyes, holding the head in an odd position—have been mentioned. Other evidences of probable trouble of some sort with the eyes are blinking, attempting to brush away blur, rubbing the eyes, shutting one eye when reading, and inflamed eyes. A pupil showing any such symptoms should be referred to someone competent to diagnose and deal with visual difficulties.

Both teachers and parents often do not realize that symptoms of visual defect may be not apparently related to vision (headache and nausea, for example) and that a child who sees poorly may not recognize that fact. He does not know how things look through good eyes, and so does not sense his own trouble. How should he know that his failure in both reading and sports is due to poor vision rather than ineptitude! Unfortunately the teacher may not see any connection between a lad's restlessness and astigmatism, or his dislike for school and a muscular disbalance so slight that only an oculist can discover it. Little wonder that children are often totally unaware of even marked defects.

Teachers should also do what they can to relieve eyestrain in the classroom. Lighting should be adequate, though all too often even in study halls and libraries it is not. The light should come over the left shoulder (except for left-handed children) and be softly reflected from walls and ceilings; it should never shine directly into a child's eyes or on the desk or books. The teacher cannot redesign the school lighting system, but she can do much by the way she adjusts the shades and arranges the seating, uses artificial light, and minimizes eye work on dark days. Short recesses of work not imposing a strain on the eyes give visual rest. Children should be taught to stop occasionally when reading, to rest the eyes. They should not be forced to do close work or copying which involves much eyestrain. Special sight-saving classes for children with serious visual defect are now common; adequate lighting is provided, and material with extra large print. Children needing such a class should of course be sent to it, if available. When glasses have been prescribed, the teacher should see to it that they are obtained and worn. In short, she should first be a lookout who spots possible visual troubles and refers them to a specialist, and second she should be the friendly supervisor who sees that the specialist's recommendations are carried out and that conditions for the use of eyes are as good as they can be.

Chart 12 shows about 3 per cent of children having defective hearing in one or both ears. It also shows defective eardrums in 9 per cent of the cases, and excessive wax in ears, which may cause trouble, in still more.

Deafness in children is often not recognized for what it is. Perhaps the most common sign of inadequate hearing is an appearance of stupidity. Not hearing much that goes on about him, the child seems not alert, and without understanding of what is happening. If he has been partially deaf since early childhood, he may have imperfections or blurrings of speech due to his never having heard quite accurately. A slightly deaf child may be very irritating to a teacher who does not recognize the situation. She speaks to him and he pays no attention. To check whether he may be deaf she repeats the question in the same tone of voice and this time he replies, thus convincing her that he is not deaf but merely inattentive. What she does not realize is that a nudge from another boy following her first remark had made the deaf youngster look up and that by turning directly toward her and watching her lips he was then able to understand. A deaf child is also handicapped in relations with other children. Their chatter goes on about him unnoticed. He misses the calling back and forth in games. Soon he pulls off by himself. Increasingly in adolescent and adult life the deaf person is shut off from social intercourse and is either depressed, oversensitive, or suspicious, wondering if people may be talking about him.

Periodic examinations by the school physician or nurse should find cases of deafness or other conditions which may affect hearing. The first location of such cases may nevertheless devolve upon the teacher. If she notes inattentiveness, a flat voice, perhaps a turning of one ear toward the speaker, perhaps a discharging ear, medical attention should be obtained.

The markedly deaf child will need special care in an institution or class where lip reading is taught. The mild case who may stay in the regular class will need tactful help. The teacher should place the child in front and to her right so that he can see as well as possible to read her lips and expression. (Somewhat deaf children thus secure some help, even though they have never been taught lip reading.) She should try to speak slowly and clearly, to bring the child into things rather than let him be left out, and to have the other children try also to do these things. Special help may be needed on such subjects as reading and spelling where failure to hear a word accurately may bring misconception. And if the child is helped not only with his schoolwork but also with his social adjustments, he may learn to take his handicap in his stride.

The teacher should also do what she can to prevent deafness. Congenital deafness is almost always hereditary. Acquired deafness may follow such diseases as measles, scarlet fever, or diphtheria, or result from chronic conditions of the nose and throat which may spread throughout the Eustachian tubes (connecting the middle ear and pharynx). Damage to the ear may also come from carelessness in diving or swimming. The majority of cases of deafness begin in early childhood. The teacher should do everything possible to see that children convalescing from serious contagious disease do not have neglected infections in the ear, that infected tonsils or adenoids are removed, and that chronic catarrh is treated.

Miscellaneous Chronic Conditions of the Mouth, Nose, and Throat.— As well exhibited by Chart 12, these physical handicaps are in total most frequent of all. Partly because so common, their medical and even more their psychological seriousness tends to be neglected. Enlarged adenoids cut off the passage from the back of the mouth into the nose, thus causing mouth breathing. And since discharges from the nose cannot freely escape into the mouth, infection may be spread into the sinuses or the Eustachian tubes, with possible effects on hearing as above mentioned. The nose tends to become thin, the upper lip short, the chin dropped, and the teeth irregular in position with the upper teeth protruding; the expression is stupid. At night there is likely to be snoring, and when eating some bother in swallowing, because of the blocking of the passage at the back of the mouth. The youngster may not play as much as other children because of discomfort in breathing. In short, enlarged adenoids are not merely an interference with normal physiological functionings. They are a serious burden upon normal child existence, and may cause such deforming of facial appearance as to be a handicap throughout life. Tonsils, if enlarged, may also interfere with breathing or swallowing; if infected they are a constant health hazard. Any such focal infection, discharging its poisons back into the body, is likely to make the child irritable and restless or listless, and easily fatigued. Rheumatism and heart disease may be an outcome of the spread of the infection.

Some dental decay is almost universal. But serious decay may be again a source of infection and possibly cause serious infectious disease. Imperfect teeth may prevent adequate mastication of food, and dental deformity may seriously affect appearance. The writers know a girl whose social life during her first year in high school was dominated by her sensitiveness about her protruding teeth and the band on them which was to bring them into somewhat better position but which in the meantime constantly reminded her of her peculiarity. Enlargement of a lymph node or gland in the neck may come from infection of tonsils or adenoids or teeth or gums. Serious malfunctioning of such ductless glands as the thyroid may cause manifold physical and psychological effects which will be touched on later.

Deformities, Paralyses, and "Crippling" Diseases.—Chart 12 shows frequency of paralyses and of lateral curvature of the spine. If to these two types of cases are added all individuals with other deformity of the back, a clubfoot, a deformed hand, or a limb lost in an accident, the total is much larger. And if to these are also added those with any physical deformity or blemish which presents a psychological problem (such as a misshapen jaw or nose, a birthmark, a disfiguring scar, or acne or pimples on the face), the entire sum of all persons having some sort of physical handicap or blemish is evidently very great. The psychological problems these individuals present are various but almost always difficult. The seriously crippled must learn to do what may be possible by way of getting about and taking part in the routines of life. If possible, a vocation must be found and preparation made for it. But it is the less extreme cases which are not only far more numerous but often seem to present more difficult psychological problems and indeed to suffer more from their handicaps. That is, these last cases are out with other youngsters but handicapped in their relations with them. And their handicap is often not so extreme as to arouse sympathy; it may even cause dislike or ridicule. Some sample cases will make clearer certain of these problems.

Kurt suffered from an attack of infantile paralysis when he was ten. His parents did everything they could for his happiness—had a private tutor for him, were always with him, the father never crossing him in anything. His sister and he were inseparable. This extreme dependence on the family became a problem for all concerned. Another case was normal in childhood—active in all childhood games, average in appearance, and confident. Then paralysis followed an attack of diphtheria at twelve. Vigorous play was stopped. As a result of efforts on the part of the family to teach him again to swim and play with others of his own age some adjustment was brought about, but feelings of inferiority persisted (48, p. 190).

Mary was a hunchback. Childhood play and adolescent social life were largely impossible for her. But from early childhood her parents had wisely taken an "objective" attitude toward her deformities. There were, to be sure, certain things she could not do, but then everyone has limitations and difficulties which must be accepted. The thing to do was to find out what one could and could not do, locate a few things one could learn to do well, and for the rest take things in one's stride. Her companions admired Mary for her good nature and matter-of-fact acceptance of her handicap. Some things (making little humorous sketches, for instance) she could do extra well and for these she was admired and sought after. Though it is often not considered desirable that a cripple should teach, Mary obtained a position teaching the first grade. She was friendly, patient, and somehow her short stature seemed to get her down on a level with her children, so that she was in a desirable way with them, rather than over them. The children both liked her and were sorry for her, and as a result behaved themselves extra well. As the superintendent remarked, he thought it was a good thing for the children to have some experience in contacts with a handicapped person. He considered her one of the ablest teachers in his school system.

Charles had a crippled right arm, as a result of birth injuries, about which he was exceedingly sensitive. In childhood his parents had limited him to quiet games he could easily play—it seemed never to have occurred to them that he might learn to throw with his left hand, or otherwise participate in boyhood games. In adolescence, whenever possible, he avoided shaking hands, so that people would not have his deformity called to their attention. He went to no dances or other social affairs. In interesting contrast was Henry, who had somewhat the same defect. But somehow, from his mother, he had got the idea that his handicap was a challenge; there were sundry things which he could and would do anyhow and he would find a few things in which he could excel. Thus he could throw a baseball with his left hand better than the average boy could with his right. And he wrote with his left hand exceptionally well.

Hortense was short, squat, thick-lipped, very near-sighted, and clumsy. In childhood she "got along fairly well," but in adolescence she apparently decided she was socially hopeless, was careless and sloppy in appearance, thought of herself as an intellectual and a free thinker, liked to attract attention by her radical ideas (she did not have many ways in which she could attract attention). Her peculiarities of physique were quite clearly background determining factors in her personality. They probably were products of some obscure glandular imbalance.

The handling of cases of tuberculosis or heart disease is so dominated by medical necessities that little need be said about them here. But it should be pointed out that psychologically they present somewhat the same problems as a cripple; their lives are restricted and they must learn to adapt to that fact.

Can any generalization be drawn from this diversity of cases, from almost complete paralysis to little more than pimples on the face? The following conclusions seem warranted. In the first place, over and above any consideration of physical effectiveness or health, it is highly important psychologically that physical handicaps or blemishes be lessened so far as possible. Acne may not be a health hazard, but it may prevent a sensitive adolescent from making important social adjustments. In the second place, even more than with the normal person, it is important that the handicapped youngster make good in some way. The prestige of the second boy with the crippled right hand as a left-handed pitcher, and of the hunchbacked girl as a clever artist, was vital for their psychological health. But it is foolish to try to make good along lines where the handicap especially operates and failure is particularly likely. A boy with a crippled arm who was bound he could play the violin, and a cross-eyed girl with dramatic ambitions wore themselves out to no good purpose. Finally, the handicapped person should associate with normal people, learning all the time to accept his handicap and be accepted as he is.

Speech Defects.—Speech defects may be of various types and come from various causes. Children with blurring or peculiarity of speech due to some anatomical peculiarity like cleft palate are relatively rare. Most common are stammering and stuttering, which are best thought of as having their origins in emotional strain of some sort. Undoubtedly every reader of this paragraph has at some time unexpectedly been called upon to speak to a group or meet some important person, and found that his mouth was dry, voice weak, and enunciation indistinct and somewhat incoherent.

In general it will be convenient to think of speech difficulties as possibly due to any one of five causes, and check these off in considering a particular case. (1) Defective speech may be one feature of a general mental inferiority or delay of development. Idiots cannot speak at all, and imbeciles relatively little. Speech defects are more common among children below average in ability. (2) Some difficulty in speech may be one feature of a total picture of malnutrition, infection, or nervous disease. (3) Poor speech may be due to some structural defect in the speech organs such as cleft palate, a tongue misshapen or tied, a dental deformity, an obstruction in nose or throat like enlarged tonsils or adenoids. (4) Infantile habits of speech (such as lisping) may be continued from babyhood usually because doting parents thought them cute. Not infrequently an adult has a slight lisp or other peculiarity of speech which seems like an affectation but of which he is largely unaware and which is simply a bad habit carried over from childhood. (5) The difficulty may be essentially of the "embarrassment" type. The individual feels insecure and thus much more readily than the average person stutters or repeats a syllable, or stammers and is unable to articulate freely. Clearly each case must be dealt with according to its cause. The second and third types call for medical or surgical attention. The last involves problems of emotional strain which will be discussed later. The important point here is this: Whether in a given instance a speech defect is psychological in origin or not, almost always such defects have important psychological consequences. Doubtless every reader knows of some such instances.

A college student reported that until he was about six years old he lisped. This lisp his brothers delighted to imitate and he would then become angry and cry, thus gaining a reputation of crybaby. He would then protest to his mother and thus obtained the additional reputation of tattletale. As a result he early developed solitary habits which persisted into adult life. Another young man wrote of stammering at an early age, being laughed at by other children, and getting into frequent fights as a consequence. College students often tell of complete unwillingness to recite having its origin in such speech defects (48, p. 189).

Malnutrition.—A word remains to be said, in addition to what has already been indicated at the close of the preceding chapter, about the complex condition of inadequate nourishment which is usually complicated by one or more physical defects, frequent illness, and bad health habits. Vitamins and a balanced diet are now enough a matter of common talk so that no discussion is needed here. But teachers may forget that dullness may be largely malnourishment, and also that malnourishment may occur in prosperous homes, the food being sufficient but not such as a growing child needs. Many cases are pitiful indeed.

Eleven-year-old Marie was failing her school work. She was twenty pounds underweight, round-shouldered, pallid, and much of the time sat motionless and expressionless, seeming often in a daze. Colds were frequent. Her voice was flat and indistinct. Inquiry showed that this girl never had any breakfast before coming to school, that her mother worked and lunch was thus whatever the child could find in the icebox, and that the evening meal consisted chiefly of bread, potatoes, and gravy. A little later an active tuberculosis developed.

ILLNESS AND ITS PSYCHOLOGICAL REPERCUSSIONS

Table 4 summarizes an extensive study of illness and shows well that sickness is part of the total life experience of almost everyone. About half of all school children in a given year are ill, many of them several times in the course of a year. Most common are respiratory illnesses such as colds or influenza. Next come communicable diseases such as measles. And next in order come accidents. Out of a thousand school children, about two die every year. Here are sundry intrusions upon life, and sundry special circumstances which affect living.

Psychological Symptoms of Physical Ailments.—It should be mentioned first of all that a physical disease is practically never without its psychological symptoms in mood (such as irritability or depression) and conduct (like restlessness or lethargy). Typical of contagious diseases in the first period is fever. This may show in classroom conduct disorder.

An elementary school teacher once told one of the writers of her experience with two very well-behaved twin boys. They ordinarily worked together and were most likable youngsters. But one winter day she noticed that they were frequently cross and were having trouble with each other. She decided that they should be separated and put one on either side of the room. A day or so later they were absent with measles. Soon other children near where she had put each boy came down with measles. In short, she had taken the almost perfect step to spread the infection from these boys around her room as widely as possible.

Another teacher during an epidemic made a special point of watching each child closely every day and sending anyone who showed any possible symptoms at once to the school nurse. Not only was the room without such conduct problems, but the epidemic made less headway among the children under her charge.

A college student was doing failing work and was also something of a classroom and dormitory problem. She was very restless, chattered almost constantly, was irritable, would lose her temper and then weep. Medical examination showed chronic appendicitis and infected tonsils. She was twenty pounds underweight, had a temperature, and looked feverish and half-sick. Her academic and conduct problems quite clearly had their cause in her ill health.

TABLE 4.—Illness [a] and Death Rates per 1000 Population from Birth Through 19 Years of Age [1]

Age Group	Number of Illnesses	Number of Persons Sick	Sickness Group [b]							Annual Death Rate
			Respiratory	Communicable	Digestive	Accidents	Skin	Ear	All Others	
Under 5	1212	676	537	235	156	71	42	41	130	17.11
5–9	978	585	424	241	69	86	41	28	89	1.92
10–14	679	459	303	97	51	86	43	—	99	1.46
15–19	599	411	253	40	55	81	48	—	122 [c]	2.41

[a] Illness is defined as any symptom, disorder, or affection which persists for one or more days or for which medical service was received or medicine purchased. Illnesses include the results of both injury and disease. Illness rates are based on sole or primary causes; a continuous period of sickness is never counted as two sicknesses.

[b] Only groups with rates of more than 20 per 1000 are listed.

[c] Puerperal and female disorders in the years 15–19 total 24.7.

Psychological Recovery After Physical Illness.—When a child has been out of school because of illness, there are problems not simply of making up missed schoolwork but also of his return to the play group and more generally of social adjustment. Probably the child is still not very strong. He finds himself bewildered by work the other children are doing which he does not understand. When he tries to enter into their active play during recess, he finds himself feeling weak and unable to keep up. Some children never get back into easy association with other youngsters.

When Leroy was ten, influenza kept him out of school most of the winter. Other pupils and the teacher herself had also been ill, and she felt unable to give each one special help to make up missed work. Leroy had been a good student and did not like to show it when something came up he did not understand. He had difficulty particularly in arithmetic and was greatly disturbed by almost failing. Not until two years later did he regain his academic self-confidence.

Harold was in a hospital and then a nursing home for eight months as a result of a near-fatal automobile accident. Upon his return home he was shy with his family, seemed afraid to go out into the neighborhood, hung back near the door when his class went out to recess, and was timid about speaking in class. He made a good physical recovery but seemed unable to romp again with other boys of his own age. When he entered high school, however, the new group and the variety of sports seemed to give him courage to try again, and he gradually began to participate in recreational and social affairs.

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[1] Adapted from (7), pp. 244, 248, 249.

Nervous Diseases.—Certain conditions remain to be mentioned which are not highly frequent but which have such psychological involvements that they should be known. Epidemic encephalitis is sometimes incorrectly known as sleeping sickness—incorrectly because it is not the same as African sleeping sickness and because there are not always unusual amounts of sleep. In mild cases diagnosis may be very difficult (the patient should always, of course, have expert medical attention). The child may seem simply to have a mild influenza, be just sleepy, or have a head cold. Usually there is some fever, drowsiness, and ocular disturbances such as double vision. Important here, however, are conditions following the acute illness. The child may wander around the house at night unable to sleep, be overtalkative, his face may show a mask-like immobile appearance, his movements be slow, or there may be overactivity. Emotional disturbances such as extreme irritability, violent temper, and occasional delinquency are a frequent accompaniment. In young children there may be some arrest of intellectual development.

One writer tells of a girl who came to the investigator's attention when she was eight. She frequently ran away from home, and did queer things like mixing salt and pepper and refilling the shakers with the mixture. Investigation showed that when three months of age she had been "sick with a high fever," but the diagnosis of encephalitis had not been made at that time. The case was lost track of, but later, when the girl was almost 20, she was found spending the night in railroad stations and wandering about the city. Such cases are obviously very difficult conduct problems. Consistent intractability in the classroom may have such origins. Many of these cases need special class or institutional care (45).

Chorea is a disease most obviously characterized by jerking movements; it is often called St. Vitus's dance. But these movements are not the only symptoms. Often the first symptoms are emotional; the youngster is irritable, restless, and fidgety, drops things, stumbles, and makes faces. The condition is most common from about five to the middle teens, and is about three times as frequent among girls as boys. It is believed to be the result of infection frequently beginning with diseased tonsils; the infection may spread to the heart muscles. There is here a group of serious medical problems. But all too often at the beginning of chorea or in very mild cases the teacher treats the irritability and clumsiness from a disciplinary point of view, thus only aggravating the situation.

Encephalitis and chorea may serve as illustrations of the fact that nervous disease may show important psychological symptoms. Malfunctionings of a ductless gland may so manifest themselves. The individual may be irritable, erratic, excitable, or, contrariwise, he may be lethargic and slow. And usually subtle differences in physical development may be noticed. In any case where such factors are suspected, medical attention is obviously called for.

A teacher may have an epileptic pupil. A convulsive seizure may occur, or a petit mal attack—an episode of confusion or "fainting." Odd irresponsible behavior may be an epileptic equivalent. Mood may be gloomy or suspicious. But it must be at once added that most instances of fainting are not epilepsy but simply mild episodes of a digestive or circulatory origin. Odd behavior and gloominess may have many other causes; some epileptics show no peculiarities of personality. Seizures may be hysteroid rather than epileptoid, emotional rather than organic in origin. These last types of seizure will be discussed later.

HEALTH HABITS

It remains to be pointed out that there are involved, in health, sundry physiological routines and habits with which the teacher may be concerned. Food habits are clearly important. The nursery school tries to provide its children with proper food and then teaches them how to behave when eating. Most elementary schools have children chronically torpid because of inadequate or ill-chosen and ill-cooked food at home, and sallow-faced restless boys whose troubles appear to have their origin in innumerable confections at all hours and no appetite at mealtime. The high school encourages its students to eat a sensible lunch in the school cafeteria, not to eat foolishly at the corner drugstore, and not to develop dietary oddities.

A quick survey of a college group will discover plenty of illustrations of bad dietary habits and attitudes still persisting. A home economics major did not until her senior year course in dietetics finally teach herself to drink milk regularly. Another girl visiting at a friend's home "just didn't like tongue" and "never ate beans" and "wouldn't touch asparagus" and "eggs just didn't agree with her." Dietary broad-mindedness and a willingness to try new foods *should* be developed in pre-school days. A thrifty freshman makes a lunch out of ten cents' worth of sugar buns which he gulps while playing chess at the Y.M.C.A., and then wonders why he is constipated.

In high school the teachers of home economics and physical education often do much to improve dietary habits. Not only do they inform the students. The training diet for the school teams is used as an object lesson. A good choice of food in the cafeteria is rewarded by a special ticket placed on the tray. In a small high school greatly addicted to Coca-Cola the teacher fed one group of white rats with that drink instead of milk. Both students and their parents at a parent-teacher meeting were much impressed by the undersized nervousness of the Coca-Cola rodents. In elementary school, problems may be both less evident and harder to deal with.

Rosalia's widowed mother leaves for her work early and comes back late; the children have a grown-up breakfast, a picked-up lunch, and a late, heavy, ill-cooked dinner. The mother is grateful for the milk and crackers the school gives Rosalia at recess. But Gwendolyn presents a more ticklish problem. Her socially overactive mother is rarely up in time to get breakfast for her daughter, and gives her money for her lunch which she buys at a confectioner's.

Sleep habits are dealt with wisely by the nursery school; although largely out of the school's control in later years, they are often a factor in its problems. In every one of a number of groups of children (aged 10 through 17) investigated as to their sleep habits, some youngsters reported having been up until one o'clock or later during the preceding week. Only about a third had a room to themselves and about half shared a bed with some other member of the family (48, page 181). All too often the radio or adult activities keep children up. Multifarious goings-on may affect the sleep of high school students. That this may occur is suggested by the finding that 20 per cent of a large group of high school boys were away from home at least part of every evening in the week (27). Money-earning may intrude upon sleep habits; thus a high school boy may rise at five in the morning to take care of a morning paper route and be out till after eleven in the evening with a late edition. Lack of sleep causes difficulty in maintaining attention on a task, and drowsiness or irritability. An inattentive, cross, mistake-making pupil may be primarily a child without enough sleep.

Other health habits need only be mentioned. Habits of elimination are learned in the pre-school years. But occasionally enuresis (bedwetting) may persist; a teacher may discover that a nervous youngster who was greatly disturbed at a plan for an overnight class trip was fearful lest he shame himself. Routines of elimination may be disturbed by the earlier start and changed hours of high school. Elementary habits of cleanliness may be lacking.

The teacher seeking to understand the problem pupil must, then, consider whether faulty habits as regards diet, sleep, or elimination may be a factor. They will be, in a majority of these cases. She should see the establishment of such basic habits for physical well-being as an important educational responsibility for both healthy development and comfortable social living together.

To be sure that pupils are informed is the obvious first step. Prerequisites for the desired habit are sometimes strangely lacking. Thus a school recently visited had no soap in the washroom. To save trouble the cafeteria tables had been piled in a corner and the students ate hurriedly and disgustedly from trays in their laps. Habits of cleanliness and of unhurried eating could hardly be fostered under these circumstances. Recognition of desirable habits, as by a health score card, will foster them.

THE INTERRELATIONS OF HEALTH AND PSYCHOLOGICAL DEVELOPMENT

This chapter has touched upon a great variety of problems—from dentistry to delinquency and enuresis to epilepsy! Are any helpful generalizations possible?

1. In dealing with any psychological or educational problem it is well, first of all, to consider whether some physical defect or disease may be in the background. What seems to be stupidity may be deafness. Intractability may be really encephalitis. To deal with such cases as if they were simply stupid or delinquents is cruel—and stupid. It is a cheering thought that a teacher may hope to have certain of her most persistent problems solved for her by medical treatment. The erratic, irritable, and truant boy may become a star pupil when glasses take care of his farsightedness. The listless and inattentive failure may markedly improve, once diet and sleeping habits have been changed. The chronic troublemaker may quiet down, once infection in teeth and tonsils has been removed. It is a mercy for teacher, class, and herself that the choreic girl is now resting at home in bed under the care of her family physician; her recent grimacing, dropping of books and pencils, and talkativeness had become a problem for all concerned.

2. Problems of physical health involve educational and psychological responsibilities. Glasses are no help in school if they are not worn. The task is not simply to cajole Johnny into wearing them, but to bring about a desirable attitude in the matter on the part of both John *and* his friends. Does he resent the glasses as a confession of weakness or does he take pride in them? Do the other boys yell "four eyes," or do they either take the glasses for granted or show friendly interest? The former victims of malnourishment or of focal infection may now be much healthier. But they may need special help to bring them up from their former poor work, and the teacher must not continue her former attitude of discouragement or exasperation regarding them. The victim of encephalitis does not like the teacher, nor she him. It is her responsibility to change the attitude of both parties, and also to help this child, not popular with his fellows, to find a better relationship with them. After choreic Mary, having been in bed for two months, and John, out of school half a year following a near-fatal accident, are back in school once more, neither feels physically strong. Both feel a little shy and strange after their absence. It is easy for them, weak as they still are, to become discouraged about the schoolwork they have missed. The other children are doing long division which the returning youngsters don't understand at all. On the playground they try to run with the others but soon feel tired and can't seem to keep up. These problems of psychological recovery are often far more difficult than is physical recovery.

Health thus presents sundry psychological and educational as well as medical problems. Many psychological problems are partly or even entirely medical problems. In consequence, improvement of physical health may solve many baffling problems of conduct or ineducability.

3. However, the relation of health to psychology must not be thought of simply with reference to certain special cases or problems. The pervasive importance of health as a factor in personality must be emphasized. It is fairly obvious—at least once attention is called to it—that a child with cross-eyes or a clubfoot or tuberculosis is bound to have a markedly different personality from a completely healthy child. A child slightly deaf, undernourished, or chronically heavy from lack of sleep is not the person he might have been in interests, abilities, or mood. But effects of ill health may be more subtle, and they may operate over long periods of time. As has been mentioned, encephalitis so mild as to be unrecognized may cause marked aberrations of personality which persist for years after. Lack of some vitamin or other

special element in the diet may affect temperament and capacity for work. Thus special mid-morning feedings of milk and food concentrate to build up calcium metabolism were found to reduce nervousness in the classroom (excitability, worry, jumpiness) by 13 per cent (26). College students who have at any time had a serious illness appear to be more subject to fear and anger than persons who have not thus suffered (42).

Even more general and pervasive effects of health may be possible. The next chapter will take the attitude that mental ability is not something in the central nervous system aloof from the rest of the organism. Hardy in certain respects though it is, the nervous system may be affected in various ways by the body's total condition. Glandular disfunction may grossly derange it. But functioning ability involves still more. Energy and liveliness are important. If one child does twice as many things as another child, he is likely to develop more intellectually—and to know more and be able to do more things. Succeeding chapters will point out that the healthy child is livelier in interests; he also is liked better and is at a social advantage. The organism's health and vigor are indeed of pervasive importance as regards the total personality.[2]

SUMMARY

About two-thirds of all school children have some more or less serious physical defect (not counting one or two decayed teeth). About one-third of all children have some visual defect, which if uncorrected may handicap both schoolwork and play and cause headache or other distress. Three per cent have defective hearing which handicaps the child in all his contacts with other people. Defects involving the nose and throat, such as infected tonsils and enlarged adenoids, are also common. They may interfere with normal breathing, they usually lower vitality, and (in the case of adenoids) they may adversely affect the growth and shape of the face. Deformities, paralyses, and blemishes may handicap the individual physically and in any case put a burden of adjustment upon him.

In a given year, over half of any group of children are likely to be ill. And about two in a thousand children will die. The teacher must often be the person who first notices evidence of illness. She is often the one most responsible for bringing about educational and psychological recovery after the illness is over.

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[2] As a later chapter will emphasize, what happens to a person psychologically affects his health.

Reasonable habits of diet, sleep, elimination, and recreation are important for health, both physical and mental.

In all these problems of health, the teacher must often be the one who notes the first symptoms and sees that remedial steps are taken. Almost always there are problems of bringing the child back into his place in both his schoolwork and his associations with other children after the health problem has been dealt with. The larger effects of health upon intellectual as well as physical vigor, activity, and tone are of great importance and should also be recognized by her.

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CHAPTER IV

The Nature and Nurture of Abilities

It is common in everyday speech to say that so-and-so is an able fellow, that this other person is of about average ability, and that a third individual is not very bright. And what is meant is so generally recognized that no elaborate definitions or explanations are necessary. The reference is to the general level of effectiveness and understanding which the person in question has shown in dealing with the variety of issues which come up in everyday life. It is evident to everyone that people differ greatly in their competence in meeting the problems which come to them. It is also obvious that a twenty-year-old man has much more such ability than a six-year-old boy. Ability is something that increases, during the years with which this volume deals, and something the increase of which may possibly be furthered or hindered by various agencies including the school.

This practical and obviously important topic must now be considered. What are the factors involved in a person's general level of effectiveness? How does such ability develop over the years of childhood and youth? Is it possible to increase an individual's effectiveness —one's own, for instance? Can a school increase the abilities of its pupils? If so, how? Here is a central problem of every ambitious person, and a major issue of educational theory and practice.

A First Overall Analysis

Evidently the everyday concept of ability is a very broad one. The question concerns the individual's effectiveness in various real life situations. Many factors are involved. Which are most important and significant for understanding educational problems?

Factors Involved in Realized Ability as Manifested in Everyday Life.—A first factor in the adequacy with which an individual meets a situation is the information and skill helpful in dealing with it which he possesses. Where the task, and the information or skill needed to deal with it, are very specific (as in repairing a piece of electrical equipment), this factor is well recognized. But it is hardly less important in other situations where it is less evident. Thus the average traveler feels much at a loss during his first days in a foreign country. Not only the language but a hundred and one different manners and customs and attitudes confuse him. This experience in incompetence can be had without foreign travel, however. The back-country boy in the city for the first time probably feels himself quite as much without ability to deal with the hurrying confusion about him. A city man trying for the first time to manage farm animals feels terribly stupid. It will be well to keep all this in mind when, a little later, data are reviewed which seem to imply that country children and immigrants average below native American youngsters in "intelligence."

A second factor is less immediately evident, but very important and usually inadequately dealt with. A person is able, in dealing with a problem, in proportion as his methods of work and attack upon problems are effective. Some people go right at a task, whereas others fiddle around. Some give up quickly if a solution is not soon found, but others stay with it. Some try this and then that at random and before long do over again what has already been found not to work, whereas others go at the matter systematically, checking off possibilities in order. Some housewives are chronically distraught and their homes in confusion, but others move with easy methodicalness through housekeeping crises. In school some students settle down quickly to study, but others fuss and glance about and are distracted by every passing coed. One student has his notebook always with him and his notes are systematic; another makes rambling jottings on the back of an envelope which is soon lost. In office, factory, home, and school a large element in effectiveness is method of work and attack upon a problem. This factor is so important that it will be returned to in a later chapter.

A third factor in an individual's competence is the extent to which emotional interference or facilitation affects his thinking and doing. Many persons who appear to have excellent intellectual capacity are ineffective because emotional distractions or blockings interfere with a free and consistent dealing with a situation. Others, apparently of less intellectual potentialities, react with easy confidence in a crisis and "excel themselves."

In everyday life individuals thus show themselves able in dealing with situations in proportion as (1) they have needful information and skill for dealing with the problem in hand, (2) their ways of going about their work or attacking the problem are efficient, (3) they are not emotionally distracted or distraught, but rather emotionally stimulated by the situation. A basic factor still remains: (4) a general capacity or potentiality. It was pointed out in Chapter II that although conditions of nutrition and living affect an individual's height, still some people are constitutionally tall and others short. Somewhat analogously, individuals differ in their constitutional potentialities for intellectual tallness or shortness. Some people's nervous systems are much more effective than others. And it is to be expected that this factor, popularly called general intelligence, will put a limit or ceiling upon the extent to which the other factors mentioned above can operate. It should also be clear, however, that most people acutally do not develop their potentialities up to their limits. Because they do not have all the needed information or skill, or the best of work habits, or adequate emotional adjustment, their actual abilities are distinctly below their potentialities. Feeble-minded children may be close to their limits. But many capable individuals may be far below. And within the great group of more or less average people differences as regards these four factors may be very important in determining comparative effectiveness in everyday living.

The reader may find it interesting and instructive to consider his acquaintances with respect to these various factors. The importance of being adequately informed with reference to a topic was well shown by the contrast between students in a course on medieval history who had read many good historical novels dealing with this period and other students who had had no such previous information. To many in the latter group medieval ways were hardly more understandable than a report of happenings on another planet. For contrast as to methods of work, the reader may well keep a little record of several students during a study hour in the library, as to the number of minutes it takes each one to settle down to work and the number of times each one glances up or moves around. Sample notebooks may also be examined to see how students differ in the orderliness of their memoranda. Great differences in all these respects will almost certainly be found. The very diffident, hesitant, anxious person who recites stumblingly because of embarrassment and seems chronically interrupted in his work by emotional distresses may be compared with the expansive, ready-spoken, enthusiastic youngster who displays all his wares with great fluency and intrigues everyone with his enthusiasm. As for the last factor—constitutional capacity or potentiality—everyone knows some people who seem to have a gift for seeing the crucial issue in a discussion, grasping the essential point in a situation, and seeing significant relations which escape the average person. Other people who may be referred to as just naturally "not very bright" are inferior in these respects. Such differences in original capacity are clearly fundamental.

The basic factor limiting an individual's actually realized abilities is thus his constitutional capacity or potentiality. But the extent to which his potentialities are realized depends on various factors, of which the four above-mentioned are most important. In interpreting any effort at measurement of ability, any experiment aiming at the improvement of ability, or any educational program directed toward either improvement of ability or adjustment to differences therein, all these factors should be kept in mind. Since their interrelation is somewhat more evident in connection with special abilities and disabilities than with ability in general, such special traits may well be next examined.

Special Abilities.—Certain children show decided differences in ability along a particular line. Thus a teacher notices that one child has a knack in dealing with mechanical gadgets; another shows musical talent, a third has artistic gifts. Clearly marked special abilities may be of great vocational importance. If they are based on constitutional special potentialities or capacities, they must be definitive in any program of vocational planning. On the other hand, if they are more the product of the four factors mentioned in the preceding section, they may be the product of special circumstances which may change. They may even be undesirable (as when a boy turns to a mechanical hobby because he is not getting along well with other youngsters). An understanding of such matters may be helped by considering a particular individual and the way in which special abilities may develop as a result of circumstances.

Ellen was the only child of a woman whose husband had been killed in a tragic accident shortly before Ellen's birth. The mother had done a good deal of oil painting, designing of Christmas cards, photography, and so on, for her own amusement. She had an income sufficient for herself and Ellen, and so could continue her dabbling in art. Her two consuming passions became her daughter and the child's artistic productions. As soon as Ellen could hold a pencil in her hand she was shown how to draw simple objects. The drawing lessons were short, but there were several of them in the course of a day. Frequently the mother would point out how some old house would make a lovely picture, how a tree was beautiful against the sky, how the color of a cream pitcher contrasted charmingly with the wallpaper behind it, and so on. By the time Ellen was seven years old she had visited more museums than most people do in a lifetime. And always her mother was with her, commenting, explaining, enthusing. Ellen's own efforts were greeted with praise and joy and helpful suggestions. Until she was seven, her existence was almost entirely given to the study and appreciation of art, carried on under the intimate supervision of an intelligent and talented adult.

When Ellen entered the second grade of school at seven, she amazed her teachers and playmates because she could read hardly a word, knew no childhood games or stories, could write nothing except her name—which she used in signing her "pictures"—and did not know a single number combination. But she could, and did, draw marvelous scenes on the blackboard. At recess time there was almost always a group of awe-struck youngsters watching Ellen draw. It was her one moment of success, for her recitations consisted of one failure after another. Because she hated being at the foot of the class and had reasonably good general ability, she soon improved in her schoolwork but she never excelled—partly, at least, because all her leisure time went into drawing and painting. At both home and school the one thing that paid dividends of praise and admiration was her artistic activity.

As Ellen progressed into adolescence, she began to realize how one-sided her development was, and made a few honest efforts to escape into a more normal existence. But her mother and, indeed, the entire community would have none of it. By that time she was labeled a coming young artist. Her life was so related to her mother's by a multiplicity of shared interests and experiences that separation seemed hardly conceivable; the mother's small fortune made it easy to continue such an existence. . . . Ellen is now a woman of fifty. She has never achieved any such position as her early talents seemed to promise. She does commercial illustrating, designing, and some painting. A few of her pictures have been exhibited but, while they show excellence of technique, they receive no prizes. Financially comfortable, she is a conventional, capable, but not outstanding artist.

Did Ellen inherit artistic talent, or was her skill the result of intensive, continued training? Did she have a "natural" artistic sensitivity and interest in art, or was her interest due to the fact that only by her artistic productions did she obtain the admiring attention of others? Why did she not amount to more? Would any girl of equal general intellectual capacity, in Ellen's place, have developed similarly? Certainly not. Obviously a color-blind person could not have used color as subtly as she did nor could a person with poor motor coordination have drawn as delicately. A girl of great physical energy would have rebelled against such a sedentary life. A very strongly sexed girl would probably have broken away more from her mother's companionship in adolescence. Perhaps Ellen had some special abilities. But such an assumption hardly seems necessary.

As this case suggests, special ability is usually the result of the combination of a great variety of factors. It is all too easy to posit some mysterious special capability or gift. Such an analysis as presented above seems much more adequately to describe most instances of special talent—and to be far more helpful in dealing with these individuals. Study of the biographies of great artists and musicians (to take two fields where special innate capacity might most be expected) seems to indicate four especially important factors in the development of these individuals: (1) Some had certain especially favoring physical traits such as the voice and physique of Caruso, and many probably had exceptional auditory or visual discrimination and neuromuscular coordination; (2) special circumstances developed an early and very strong special interest and drive; (3) special opportunities as regards instruction and practice furthered the growth of the special talent; (4) there was excellent general intellectual capacity. There may be (5) a certain special innate capacity or special combinations of intellectual traits. But in most instances the first four of these factors seem most important, if not entirely sufficient to account for the special abilities in question. Was Ellen's failure to achieve eminence due to lack of a real innate special artistic capacity? Rather, her economic security and her sheltered and restricted mode of life (also some lack of physical energy) seemed to have prevented the drive and the fullness of emotional experience needed for notable artistic expression.

Different in his special ability, but not in the factors involved, was Will. His father was a carpenter, but the family lived in a "white-collar" neighborhood and felt slighted. There were few books or magazines in the home. Although Will did not do well in school, he made the best ship models and was better at repairing things than any youngster in his class. His chum was another social misfit with similar interests. Both needed better social adjustment. But both boys had a genuine interest and adeptness in matters mechanical, and should be encouraged. However, Hugh's "special ability" in Latin was almost entirely undesirable in origin. Singled out by an unpopular teacher for praise, he was spurned by the other boys as a teacher's pet; however, he worked extra hard on his Latin since this teacher's favor was the one social approval left him, and became a Latin major as a result of a social maladjustment. Mary's absorption in science seemed a refuge from her failure to make good with the other sex. A special ability may thus be a symptom of some maladjustment or handicap, and most cases of special ability present some adjustmental problems. All such cases deserve careful study.

Special Disabilities.—How about individuals who seem to have some special disability or lack? Mary Anne was in the fifth grade but she had difficulties in reading. Frank was a college freshman, but his spelling was atrocious. Newton was considered by his teachers the most brilliant student in West High School, but he was extraordinarily poor at sports and was very inadept in using apparatus in the physics laboratory. Unhappy college student Henry had failed beginning German three times, although otherwise he was doing reasonably good work. Must the school throw up its collective hands and say that such youngsters, though reasonably bright in other respects, are constitutionally incapable of doing certain types of school tasks? The scheme of analysis used in the preceding section may be of help here.

The case of Mary Anne, who had difficulties in reading, has already been mentioned in Chapter III. Her trouble was due to visual defects which made it almost impossible for her to keep her eyes focused upon the page for any length of time in such fashion that she could see clearly. The poor speller also had a physical handicap. He was slightly deaf. Since he did not hear certain sounds clearly, he spelled in a peculiar fashion which was very understandable once the nature of his defect was known—and being known, it was possible to explain the difficulty to him. The extremely bright boy who had difficulty in sports and laboratory also suffered from physical handicaps. Partly because of nearsightedness and partly because he was not so well coordinated in movement as many youngsters, he had difficulty in the fine sensori-muscular adjustments called for in sports and in the use of mechanical devices. Also he lacked the exuberance of physical energy which many youngsters have.

In short, various physical handicaps or conditions may bring about what seems to be a special disability. Wherever such handicaps can be corrected, presumably the disability can in large part be remedied—though often not without special help. Thus the poor reader began to do better as soon as she obtained glasses. But she was so discouraged, and so out of touch with what the rest of her class was doing, that she required special help from the teacher to catch up. The deaf child required special explanation as to the spelling of words misheard. The clumsy bright child needed sports in which he could get along; as far as the rest was concerned, it had to be accepted that his abilities were verbal rather than mechanical.

But another factor was involved in the bright boy's clumsiness. Quick of speech, fond of reading, interested in history and English, only child of two highly verbal college graduates, as a child he had been reading and associating with adults when most youngsters were romping. The father was bookish and not mechanical. The family lived in a city apartment, and there were no opportunities to repair things, no basement shop, no pond upon which to sail model boats. All his life the boy had lived in a verbal and ideational rather than a mechanical world. His mechanical disability was in part due to his diversion of interest elsewhere and to lack of information and experience regarding mechanical matters.

A disability may have as a cause more than mere lack of liking; there may be emotional aversion or even panic. Well does one of the writers remember a very severe fourth-grade teacher whose class exercises in "mental arithmetic" he never could seem to keep up with, and whose sarcastic remarks, when he did not, caused malicious delight in the other children. Arithmetic remained thereafter a disliked, and his poorest, subject. In short, disinterest or emotional interference or blocking may result in poor work in a particular subject.

Henry's troubles with German showed a somewhat different pattern of causes. His college German class was taught by a grammatical method that referred frequently to grammatical terms. Henry had come from a very modern high school where formal grammar was largely omitted. Hence when the German teacher spoke of a conditional clause or a past tense or a demonstrative pronoun Henry was completely at a loss as to what was meant. He hesitated to admit this. In fact, he himself hardly realized that his knowledge of these grammatical terms was exceedingly vague. But the fact was that the instruction in German had a point of departure he had never reached. After his failures he became so discouraged that he made no effective effort to study his German. In short, a pupil may have difficulty with a subject because he lacks certain essential elements of prerequisite preparation.

Finally, there is the sad case of pretty Gloria. Gloria says that she cannot learn geometry. She is doing reasonably well, she says, in her other subjects. But a little conversation with her other teachers shows that she is having difficulties in French, English, and history also. She seems to have "special" difficulty in almost everything she undertakes. Gloria's trouble is primarily a lack of much general intellectual capacity and a scatterbrained inability to settle down to work at any task.

A special disability may be due to some physical handicap. It may be due to lack of interest in a subject or to emotional aversion or panic. It may be due to lack of prerequisite information and experience. Usually

—as in the examples above—more than one of these factors is involved. What appears to be special disability may be a more general lack as regards methods of work or intellectual capacity. Perhaps, in a few cases, there are genuine innate special handicaps. But the trend of results is to the effect that these are rare. Neither teacher nor student should yield to easy temptation and assume a constitutional disability in reading or arithmetic or foreign language about which nothing can be done. Rather, an analysis should be attempted, such as has been suggested above, to see whether remediable factors may not be found. Usually much can be done. At least, the individual's distress can be alleviated somewhat, and educational program and plans better adjusted to capacities. That is, *something* should be done; the disability should be either remedied or avoided and not become the rock on which the youngster's education is wrecked.

The Broad Practical Approach to Problems of Ability.—In short, a person's special disabilities or abilities, and his general effectiveness or general ability, are complex products of his total self and total experience. His physique and physical vitality, his equipment of information and skills, his ways of work, his integrations or conflicts of interests, as well as his constitutional intellectual capacity—all are involved in the ability he shows at a particular time to do a particular type of task. The last factor is obviously most important. But practically it can never be isolated from the others. The major thesis of this chapter is that only by keeping all these factors in mind can either psychological theory or educational practice regarding abilities be kept straight.

THE APPRAISAL OF ABILITIES

What contributions does this broad approach make to consideration of methods for the appraisal of abilities? It suggests first of all that any practical appraisal of the abilities of a particular child should not overlook any of these factors. And it aids greatly in understanding the nature and limitations of tests of abilities. First certain methods of appraisal may be noted which are sufficiently broad to include the various factors mentioned above.

Methods for Obtaining Judgments Regarding Ability.—If appraisal is to be very broad, some method of obtaining the judgments of persons (such as teachers) who know the individual well may be used. Most informal is a general statement, such as the following report from a "progressive" school to the parents of a tenth-grade boy:

> Ronald has been doing well in the industrial arts laboratory and has spent much extra time there. His more academic work is mediocre, however; his French in particular is unsatisfactory. All his teachers feel that his accomplishment is distinctly below his capacities. In class he is listless and often daydreams. He doesn't seem to know how to use time or study effectively. We would appreciate an opportunity to talk with you about your son's work.

This statement evidently sees the boy's abilities in something of the broad perspective suggested above. It pictures a lad with mechanical ability but (as a result perhaps partly of indifference and partly of poor preparation and work method) with inability in verbal subjects. His potentialities were sensed as distinctly above what he was doing. But when the principal went over a number of such unsystematic impressionistic reports, he was uncertain whether the same points had been considered regarding each pupil; he could hardly compare different students to see which ones presented the most serious problems of a given type. A rating scheme was therefore made part of the report on each youngster so that each pupil would be judged on the same general traits and the judgments expressed in somewhat the same fashion. Chart 13 shows the "profile" for two tenth-grade boys. The home-room teacher was asked to check, on a blank form, where Harry stood in academic work, in conduct, and so on. The ability profile was then made by drawing a line from one check to the next. On another blank she similarly rated Oliver. The graph shows the profiles for these two boys on the same chart for contrast and convenience.

The rating scheme requires that each pupil be considered not only as regards his academic work but also as to conduct, relations with other pupils, health and vigor, frustrations or furtherance of interests, general information, and work habits, as well as general intellectual capacity or potentiality. The chart shows Harry to be doing poor school work and to be a conduct problem. His relations with other people are bad; there is conflict in his home, he is not liked in the neighborhood, and is shunned by other pupils. He has no real habits of work. His sour expression, surly manner, and erratic behavior give constant evidence of the conflicts and frustrations in his life. But the teacher was inclined to believe that he really has good intellectual potentialities—though these potentialities are unrealized. In contrast, Oliver is doing good work, gets along well with everybody, is notably systematic and dependable in work, and enthusiastic about what he is doing. But his health is not of the best. The teacher feels that his intellectual capacity is really distinctly below Harry's.

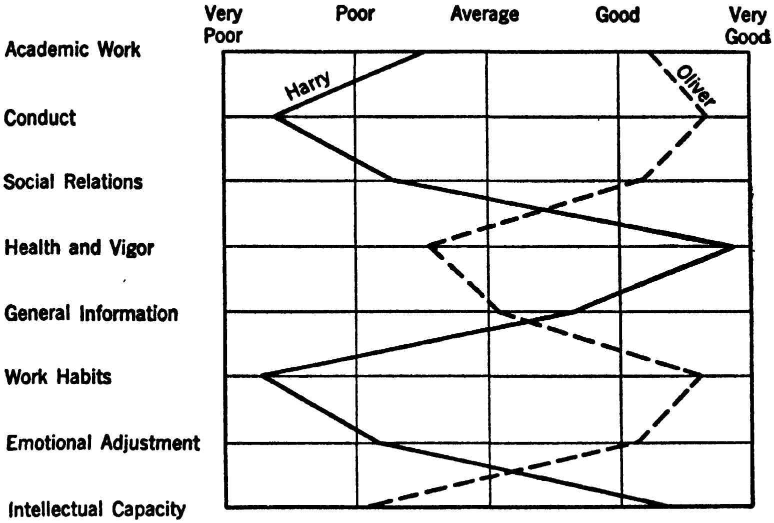

CHART 13.—Profiles picturing the abilities and traits of two boys, as indicated by ratings made by their home-room teacher.

The two cases shown in Chart 13 are extremes. But most cases are less clear, or the teachers do not know them well enough to make such an appraisal with any adequacy. A teacher may be prejudiced. She may rate the docile, well-behaved child too high and grossly underestimate the too lively youngster who is impatient of books and a sedentary educational program. Often an appraisal is wanted at the beginning of the school year, or regarding a new pupil, when teachers cannot thus judge. Also such judgments are hardly definite enough so that comparisons can be made from one school to another or from one year to another so as to compare schools or determine possible change as a pupil progresses through school. Clearly the most important and most difficult factor to get at is general capacity. To separate this last factor more clearly from the others and meet these various difficulties, the special devices known as intelligence tests have been developed. These must now be considered.

"Individual" Tests of General Ability.—Some tests of ability are so designed that they can be given to an entire class or other group at one time—quite as are tests in arithmetic or spelling or the usual class examination. But historically most important of the tests of "intelligence," and most distinctive and significant with reference to problems

in the field, are those tests planned for use with one child at a time. And of these the first and still by far the most important are the Binet scales. The French psychologist Binet issued the first scale in 1905. The form long best known in this country is the Stanford revision of the Binet scale developed by Terman at Stanford University. It was first issued in 1915 and has recently been revised so as better to measure ability in our culture.

The test is given to one child at a time, and consists of simple little questions and tasks which seem to him more like an interesting game or chat with the examiner than a test. For example, the child is asked what he would do if he were on his way to school and saw that he was in danger of being late, or if another child struck him without meaning to—such questions being put to find out if he has a sense for practical dealing with everyday minor emergencies. Absurd statements are made—for example, a man said a road from his house was downhill all the way to town and downhill all the way back home—to see whether the child can tell what is foolish about such statements. Certain pictures are shown him and he is asked what each one is about. If he merely names the objects shown in the picture, his response is considered relatively elementary; if he describes what is going on in it, his response is on a somewhat higher level; if he senses a story or situation back of it, his response is rated as still higher. He is given simple things to do, like making rhymes for certain words, repeating a series of numbers which are said to him, or reconstructing a sentence the words of which have been mixed up; he is also asked questions requiring practical generalizations, such as telling in what way wood and coal are alike or defining pity and charity.[1]

In short, the effort is to include in the examination ideas of things to be done which the child would know about from his everyday experience in play or general observation, or from minimal essentials of schooling which almost every American child might be supposed to have had a chance to obtain. In the effort to measure the last factor—constitutional mental capacity—the first factor, relevant information, is thus made unimportant by having the information called for such that all children have about equal opportunities to learn it. The second factor—methods of work—is in large part controlled by having tasks so short that systematic sustained work or study is hardly needed, by having interesting tasks which naturally hold attention, and by having the examiner constantly watch the youngster so as to keep him systematically applying himself to the work. The third factor—emotional blocking or facilitation—is controlled by having the test given to one child at a time, with special effort on the examiner's part to make the child feel at ease and confident, and by having materials and tasks so varied and interesting that the examination has the appeal of a game. The score which the child makes on the examination should in consequence be determined largely by his constitutional intellectual capacity, since the examiner is supposed to keep him to a maximum effort in an emotionally favorable attitude, and he uses material generally familiar.

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[1] It is strongly urged that the instructor demonstrate giving the revised Stanford-Binet tests and have a sufficient number of the complete blanks so that each student may have a copy while the examination is going on. The examples above are of items that are in both the revised and the original Stanford-Binet, and thus illustrate the nature of both forms. The content of the revised form is distinctive especially in the amount of material for ages 2 to 5 (six tests for each half-year) and the use of toys and other materials at these early ages both to interest the child and to escape excessive verbal material.

The student should, if possible, look over the Terman-Merrill book (54) and the blanks and materials for the revised scales so that he knows their general nature. It will be noted that the tests are in age groups from age 2 to superior adult, each test having been put (in making the scale) at the age where half to two-thirds of all of that age pass it. The usual procedure is to give a child six tests in each group beginning with an age at which he can comfortably pass all the tests, and proceeding to one at which he can pass none. The score is then figured by considering the age where he passed everything as the "base" (it is assumed that all tests below this age could have been passed had they been given), and then adding to this "basal year" two months for each test passed in any higher year (each test of the six counting as one-sixth of a year, or two months).[2] The total score is the sum of these values or the "mental age," which is commonly abbreviated as M. A. Suppose a child passes all the 5-year-old tests, four of the 6-year, three of the 7-year, two of the 8-year, and fails all of the 9-year tests. The total score will be 5 years plus 8 months, plus 6 months, plus 4 months —or a total of 6 years and 6 months. This is his mental age, and it shows that his mental development is approximately that of the average child of about 6½ years. This concept of mental age is commonly used and its connotation should be thoroughly understood.

It was said that this child showed a mental age of 6 years and 6 months.

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[2] As a matter of detail, in the lowest years the tests are in half-year groups in order to give more adequate testing in those first years of most rapid growth. And there are three "superior adult" groups for better measurement of very bright older children and adults. The month equivalents of each test at these two extremes will thus be given different values than "two months." For such details, the Terman-Merrill book (54) should be consulted.

But whether this indicates normal intelligence cannot be known until his actual chronological age is considered with reference to it. Suppose his chronological age is 6 years and 3 months; it is then clear that, in intelligence, he is approximately a normal or average child, since his mental and chronological ages are so nearly the same. Suppose, however, that his chronological age is 8 years. It is then evident that he has not grown mentally as much as he should have; he is mentally under par. The usual way of expressing a child's intellectual standing with reference to his age is to show the result in percentage. If a child is 10 years old chronologically but tests 7 years old mentally, it may be said that he shows 70 per cent of the mental growth that should be expected of him, or has an "intelligence quotient" of 70. This quotient is ordinarily referred to as the I.Q. If he is 10 years chronologically and tests 11½ mentally, he has an I.Q. of 115. In finding the I.Q., both mental and chronological ages are expressed in terms of months, and the mental age is divided by the chronological. For instance, if a child's chronological age is 8 years and 3 months and his mental age is 10 years 8 months, his I.Q. will be 128 months divided by 99 months, or 130.

Students often become confused as to the comparative significance of the M.A. and I.Q. It should be realized that the M.A. is a statement of a child's *intellectual maturity* without respect to the years he has lived, whereas the I.Q. is a statement of the *relationship* between the length of time he has been alive and the ability he has developed in that time—his brightness. A 6-year-old with an I.Q. of 150 and a 12-year-old with an I.Q. of 75 both have an M.A. of 9. They can do tasks of roughly the same difficulty. But their potentialities are very different. Four years later the mental age of the first child will probably be around 15, and of the second, about 12.

A child's M.A. increases as the years go by, at a rate usually indicated quite closely by his I.Q., until he reaches his adult level of ability.[3] That is, an individual's I.Q. tends to remain the same. But how constant is the I.Q.? Is it possible to predict with assurance that a 5-year-old boy with an I.Q. of 140 will show the same superiority at 15? Numerous studies of this issue have been made by retesting the same children at different intervals. The results seem to indicate that the I.Q. as determined by a Stanford-Binet test given by a trained investigator is likely to vary an average of three points one way or the other on a second test within a few days; about one child out of five will vary more than six points (54, p. 46). A retest six years later may be expected to show an average change of about nine points (33). Thus, if a child had an I.Q. of 90 when he was six years old, he will usually obtain an I.Q. between 81 and 99 if retested at twelve. Much larger changes are occasionally found. Variations are greater with the high than with the low I.Q.'s.

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[3] Terman now considers the average adult level of ability to be 15 (not reached till 16) and therefore uses 15 as the chronological age in calculating the I.Q. of persons chronologically 16 or over. For details, the Terman-Merrill book (54) should be consulted. The problems of adult mental level will be returned to later in this chapter.

Presumably any one of the four factors mentioned at the beginning of the chapter as possibly affecting ability might cause such a change. That is, a low I.Q. might be made on one test because of emotional upset, for instance. It might even be that intellectual capacity changed. The question will be returned to later in the chapter.

The Stanford-Binet scale is by far the most widely used and generally recognized individual "interview" test given to one child at a time. There are, however, various special individual tests for special purposes. The Binet examination has this limitation: it is largely verbal. For a child who has a speech defect, who comes from a home where English is not spoken and who therefore does not know the language well, or who appears to be much more "thing"- than "word"-minded, "performance" tests can be used—simple puzzles to be solved, or other things to *do*. The Pintner-Paterson and Arthur scales are perhaps the most widely known. They consist chiefly of various form boards and picture puzzles.[4]

The various tests which are given to one child at a time have important distinctive values. The examination not only yields a score; it affords excellent opportunity for the examiner to observe how the child works and to get acquainted with him. Interest can be maintained, any special circumstance affecting his work noted, and some adaptation made (within the rules) to each child. But there are important disadvantages. The examination of one child may take an hour. Methods of giving and scoring such tests are not simple; the manual for using the revised Stanford-Binet scales is a book of 461 pages (54). Only after intensive study and experience can a person use these examinations adequately. Clearly it is not possible to give such time-consuming tests, requiring such expert testers, to anything like all the children regarding whom some measure of ability is needed. Tests which can be given to a whole class or other group at one time, and which also are simple enough in methods of administering and scoring so that the average teacher can use them, are clearly needed.

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[4] Tests of very young children are necessarily largely individual performance tests—handling a cup, piling blocks, playing peek-a-boo, and so on. The reader interested in nursery school will find of distinct interest the little stunts of the Merrill-Palmer scale (Stutsman), the Minnesota Pre-School tests (Goodenough), and the California Pre-School schedule (MacFarlane). As already mentioned, the revised Stanford-Binet goes down to two years, making use of sundry performance items in these early ages.

Group Tests of General Ability.—The various group tests which have been devised to meet these needs are interesting examples of test-building ingenuity. A considerable number of these tests are now available. Those for the upper grades consist of blanks on which appear such questions as:

> Are apples good to eat? Yes No
>
> The day before Thursday is:
> (1) Wednesday (2) Tuesday
> (3) Friday (4) Sunday. ( )
>
> Cheese comes from: (1) milk
> (2) plants (3) eggs (4) butter. ( )
>
> What is iron never without?
> (1) coldness (2) polish
> (3) weight (4) rust. ( )
>
> Head is to hat as hand is to:
> foot, glove, shoe, coat, wrist

The pupils are told to underline the answer to each question which they consider correct or, as in the second, third, and fourth of the above examples, to write the number or letter of the answer they think best in the parentheses to the right. Some recent tests have a separate sheet on which the answers are put. In any case, the directions are so simple that any teacher can give the tests; most tests now have the directions printed on the blank. Since the pupils answer by checking, writing a number, or some other easy method, a large number of questions can be covered in a short time—as many as 200 in 40 minutes—a scope very needful in any attempt to measure such a complex trait as general ability. And checking the pupils' answers against a key is so simple a matter that a 200-question test can be scored by a clerk in as little as three or four minutes. In fact, some tests are now being scored by machine.

It will be seen that the examinations require the ability to read (they assume that the child is at least above the threshold in reading ability, so to speak), but that the questions are, in general character, somewhat like those on the Binet. That is, they deal primarily not with material specifically taught in school, but rather with matters with which the child should be familiar from his everyday experience. It is evident that the examiner cannot control the pupil's attention so well as in an interview examination or make sure that each child's emotional attitude is favorable. However, the usual group examination has many more questions than the Binet, methods of administering and scoring are more clear cut, and it is sufficiently interesting so that it usually holds the pupil's attention well; consequently the results are, in certain respects, more reliable.

The group tests are even more verbal than the Binet. And they are somewhat "schoolish" in character, since they involve reading and information partly of a rather academic nature. Results may therefore be influenced somewhat by any reading disability. Inferences based on such tests as to probable success in a vocation must be made with caution. It might best be said that such tests measure general academic ability.

Group tests for the first two grades present a special problem because the children cannot read well enough to take examinations like those just described. Therefore pictures, geometrical forms, and similar materials are used. Thus a test in one such examination consists of a page showing 30 pictures, in each one of which one part is wrong (for example, one picture shows a letter with a stamp in the wrong corner); the pupil is asked to find this part and put a cross on it. Another test consists of a series of pictures, each showing several similar objects and one which is different from the others (in one picture are four dogs and a cat); the pupils are told to mark the thing that is different from the others. Here again the aim is to present familiar material and simple tasks so as to permit each child to show the extent to which he observes well, listens carefully to what is said, or sees the relationship between objects.[5]

The score on these group tests is usually the number of questions answered correctly. This figure can be converted into mental age by comparing the score for a given child with the average score for each age made by a large number of children. Suppose a total of 6000 children eight years old, who are tested to establish the norm, average 79 points, and about the same number of children nine years old average 91 points. If a given child scored 85, he would be considered to have a mental age of 8½.

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[5] The student should procure or look over two or three sample group intelligence tests such as the series of Detroit Intelligence Tests, Pressey's Classification Tests (both published by the Public School Publishing Company, Bloomington, Illinois), the California Test of Mental Maturity (California Test Bureau, Los Angeles), or the Otis Quick-scoring Mental Ability Tests (World Book Company, Yonkers, New York). The McCall, Herring, Loftus Comprehensive Battery (Laidlow Brothers, Chicago) may serve as an example of a test of ability in combination with tests of other types.

It is, of course, then possible to find the I.Q. by dividing the mental by the chronological age, as explained for the Binet. However, because of special features of group tests which need not be gone into here, such percentage statements are not comparable to the Binet I.Q. and can hardly be considered sound. Rather, the results may be expressed as a percentile; or, instead of finding the mental age, a child's score may be compared with the grade norms. If the norm for the third grade is 68 and a child scores 69, he is considered to have approximately "third-grade intelligence." For such uses as grouping children into grades or sections, grade norms are more practical than mental ages.

Tests of Special Aptitudes.—Tests of special abilities—mechanical, linguistic, and so on—are also available, although their value has not been clearly demonstrated. They usually present a youngster with typical problems involving the special abilities being investigated. For example, a test of mechanical ability may require the pupil to put together the pieces of a bicycle bell so it will ring; a test of musical ability may ask which of two chords played for him is more dissonant; a test of linguistic ability may present a sample vocabulary in an artificial language, which is to be used in various ways. The test may also include background needed in the field, such as the grammar necessary for the study of a foreign language.

The reader interested in such materials may well look over some paper test like the Detroit Mechanical Ability Test (Public School Publishing Company) or an assembly test like the Minnesota (the Marietta Apparatus Company, Marietta, Ohio), and try the revised Seashore musical discrimination records (R. C. A. Manufacturing Company, Camden, New Jersey). The Leverenz Test in Fundamental Abilities of Visual Art (Southern California Book Depository, Hollywood) may also be of interest.

Appraising the Tests.—The various tests of general and special ability thus attempt so far as possible to determine constitutional general or special capacity, since this is the basic limiting factor in abilities. They attempt to do this by using material with which everyone tested is presumed to have had equal opportunity to become familiar, and making all other conditions favorable. Roughly, for the general run of children, this is possible. But it must never be forgotten that control of all these various factors can be only rough, and that cases may appear where these suppositions are not met.

A 12-year-old girl whose family had just moved from an isolated district in the Kentucky mountains was once referred to one of the writers for testing. The school had tentatively put her in the fifth grade, and on the second day of school her class had been given a group test of general ability. But she read so stumblingly that she did almost nothing. When she was given the Binet, it was evident that sundry information which that examination took for granted a child would know had never reached her cabin home up the creek. She was so shy from her first experience in a city that it was almost impossible to get her to talk beyond monosyllables, or to handle freely and confidently the performance tests which were also tried. Moreover, she was badly malnourished, and vision seemed impaired. Clearly her low scores not only on the group tests but also on the Binet and the performance scale could not at once be construed as due to defective intellectual capacity.

Under such circumstances the test may indicate rather well the individual's inability at the time; the scores made by the girl mentioned above showed how lacking in ability she then was to take her place in regular classes with children near her own age. But the result of intensive work with her in a special ungraded class and of medical attention to her health problems showed that though she was dull, she was capable of more than the test scores had suggested. As will shortly be seen, this distinction between realized ability and capacity or potentiality is of vital importance in the interpretation of important research regarding growth of "intelligence" and influences affecting such growth.

Relations of Ability, as Tested in School, to Later Success.—A major practical question remains to be touched upon: the question as to what inferences may be drawn, from scores on tests of ability given in school, as to probable later success. Table 5 is of great interest in this connection and summarizes an investigation of unusual significance. All children in the sixth grade of a large city school system were given an intelligence test in 1923. Twelve years later, when these individuals averaged 24 years old, their careers up to that time were carefully investigated. Adequate information was obtained about 60 per cent of the original group. The table summarizes, in compact form, the outcome of this follow-up.

Of those who, when in the sixth grade, tested in the upper fifth on the "intelligence" test, 74 per cent graduated from high school, as compared with only 6 per cent of those who in the sixth grade tested in the lower fifth in general ability. Of those in the upper fifth in ability when in the sixth grade, 28 per cent graduated from college, as compared with only 1 per cent from the lower fifth. Clearly there is a relationship between ability as tested in childhood and later academic success. But this relationship is not absolute; a few even in the lower 20 per cent in score in the sixth grade later graduated from college. There may have been children who, perhaps because of some distraction or other special circumstance in the first testing, scored much below their real ability. It may also be true that an occasional dull child does later graduate from college!

TABLE 5.—Relations of Ability as Tested in the Sixth Grade to Later Career; 4184 Cincinnati Sixth Graders Tested in 1923–1924, Their Academic and Delinquency Record, and Occupational Status in March 1, 1936[6]

Test Percentile (1923)	% Grad. High School	% Grad. College	% Delinquent	Percent in Each Type of Occupation					
				Professional	Clerical	Sales	Skilled	Unskilled	Unemployed[c]
80–100	74	28	0.3	16	24	14	4	9	27
60–79	54	15	4	9	23	16	5	13	31
40–59	34	6	6	6	18	13	8	16	37
20–39	14	2	9	3	13	12	9	22	39
1–19	6	1	10	1	6	8	9	31	44

[a] "Unemployed" includes housewives; since 54 per cent of the "unemployed" group were married women these last figures clearly give an exaggerated impression of unemployment.

The inquiry showed that, of *all* the children originally tested, 7 per cent at some time got into the juvenile delinquency records of this city —presumably still more had delinquency records elsewhere which were not included in this investigation. More of the dull than the bright children had such records, but a few of those in the upper fifth did.

Finally the table shows the very rough relationship of tested ability to later occupational status. Most of those in professional work tested in the upper two-fifths when in the sixth grade. But most of the skilled workmen tested in the lower two-fifths. Clearly ability as thus tested in the sixth grade does not permit much inference regarding vocational future.

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[6] Adapted from material in *Sixth Graders Twelve Years Later,* a bulletin of the Regional Department of Economic Security, Cincinnati, Ohio, 1938, 81 pp. The delinquency figures cover all cases in the original group having juvenile delinquency records (7 per cent). The remainder of the data covers only the 2485 cases still alive in 1936 and for whom information was found (60 per cent of the original of all sixth graders tested twelve years before). Median age of this last group was 24 years 3 months on March 1, 1936; 6 per cent were colored.

THE GROWTH OF ABILITIES

As pointed out at the beginning of this chapter, growth in abilities is really about as well recognized a phenomenon as growth in height; everyone knows that a 10-year-old child can do many more things, and more difficult things, than a 5-year-old. And a 15-year-old is still more competent. But there are many important questions regarding growth in ability which general observation cannot answer. Does ability grow at a regular rate and in a consistent fashion like height? Growth in height ceases around 18 or 20; does ability also stop growing, perhaps at about the same age? An answer in the affirmative might seem somewhat distressing! Height, weight, and strength showed an acceleration in rate of growth at adolescence; is there such an acceleration in ability? Are there sex differences? Do girls mature more rapidly in ability as they do in physique? Do men finally much exceed girls, as they do in strength? How do dull people differ from bright, in mental growth? Are dull people what they are because they grow more slowly in ability, or stop growing sooner, or both? These are all questions of decided importance for education. And they are questions whose answers must quite clearly be obtained from the use of tests, in spite of their shortcomings mentioned in the preceding section. What, then, are the test findings regarding the general trend of growth in ability?

Growth of General Ability.—Chart 14 shows typical results. Growth in ability apparently proceeds more or less regularly through childhood and adolescence; adolescence seems to have no clear effect on it. But the curves level off during later adolescence. At what age this level is reached is a matter of dispute. As already mentioned, Terman assumes a mental age of 15 as the mental level of the average adult. Other investigators have suggested that mental maturity is reached as early as 13 (giving the average adult only a 13-year mentality) or as late as 20. The present trend of thinking is toward these later years.

Testing in the Army in 1918 indicated adult mental level to be between 13 and 14. This was about the average age of leaving school at that time. Now, however, average age of leaving school and findings regarding adult level have both gone up. Further, when the 1918 results were analyzed with reference to average test score in the different states, high correlations were found (.72) between these state scores and ratings of the quality of the schools in 1900—when most of these men were in school—in these states (Bagley).[7] In short, the level of ability finally reached, as measured by the tests, appears to be affected by schooling. But it must also be noticed that the general trend of the curve of growth of ability is very similar to the curve of growth in height. That is, a basic background biological growth factor appears to be involved here.[8]

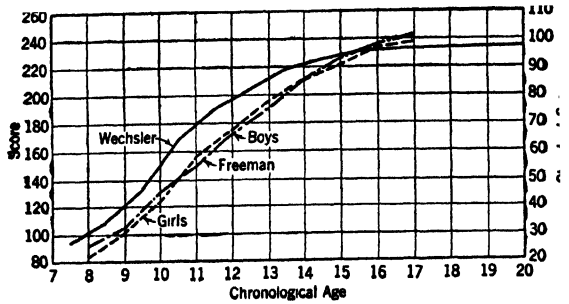

Chart 14.—Growth in general ability as shown by an individual interview test of the Binet type (Wechsler), and a battery of group tests given to the same individuals at yearly intervals over a nine-year period. (Adapted from data of Wechsler [58] and Freeman [18].)

These are the important findings regarding the growth of ability as measured by tests. But it is clear from the chart that different tests give somewhat different results and that findings must be regarded as rough. Thus there may perhaps be some effect of adolescence upon growth of ability which the tests are too inadequate to show. An adolescent lift for girls around puberty is often found, as in one set of data in the chart. There is no evidence for any general superiority of one sex over the other; apparently the sexes are equal in "ability in general."[9]

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[7] W. C. Bagley, Do good schools pay? *J. of the Nat. Ed. Assoc.*, 1923, *12*, 211–216.

[8] Beyond the scope of this volume but nevertheless of great importance both theoretically and practically is the question as to what does happen to abilities through adult life. Quite clearly ability does cease to grow, somewhat as height and strength cease to grow. Through adult life the individual continues learning and understanding and doing, but he does not *increase* in his ability to learn and understand and do. In fact, as he gets over into the older ages, his abilities may decrease—somewhat as his strength and vigor do. But again the various factors involved in ability must be kept in mind. Not only decrease in intellectual capacity but also failure to keep broadly informed and to maintain effective work habits and motivations are probably involved. Obviously attempts should then be made to maintain adult abilities at a higher level than most older people do. For a discussion of these last questions the reader is referred to (43).

[9] Tests of special ability tend to show that boys and men are more mechanical. But this fact may be due to more contact with and expected interest in mechanical matters

Individual Differences in Growth.—Do dull children grow more slowly in ability than do the bright? Does their growth continue for a shorter time? Or do "slow" youngsters continue their development for a somewhat longer period and as a result tend somewhat to catch up? Evidence regarding these questions is admirably presented in Chart 15. It combines certain data from England and this country and is valuable because of both the consistency of the findings from these two sources and the relating of the test data to other evidences of ability. Thus the highest group is made up of persons who had demonstrated their ability by having won scholarships; the English group of mental defectives were, or had been, in special schools for mentally defective children. The American defectives had been diagnosed as of very low mentality on the basis of various evidence.

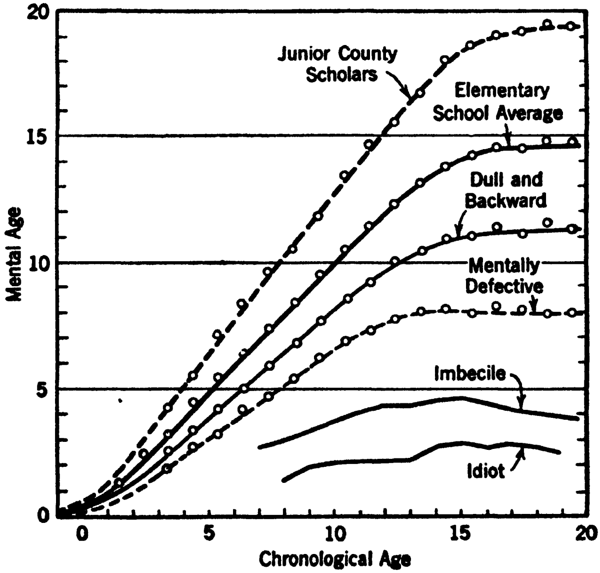

Chart 15.—Differences in curves of mental growth of children with different amounts of abilities, from superior children who won scholarships, to idiots in an institution for the feeble-minded. (From Burt [8], p. 650; the lower two curves from F. Kuhlman, The results of repeated mental examinations of 639 feeble-minded over a period of ten years, *J. Appl. Psychol.*, 1921, *5*, 195-224.)

As will be seen, the chart shows the dull and bright cases growing further and further away from each other with increasing chrono-

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among boys rather than to any constitutional greater mechanical capacity. Girls usually score higher in verbal tests.

logical age. Thus the difference between the English children who later won scholarships and those who were put in classes for the mentally defective was only about four years of "mental age" at age 6. But at 18 these two groups were almost twelve years of mental age apart. Apparently the bright grow in ability more rapidly than the dull. And the mentally superior individuals also appear to continue growth somewhat longer. In fact, the curves for the most defective individuals appear early to go into a decline. Quite clearly, then, the problem of adjustment to individual differences becomes increasingly severe with increase in age.[10]

Do children usually grow in ability at a steady and consistent rate, or may one child show a spurt of growth while another lags and drops behind his fellows? Such variations in rate of growth would evidently involve changes in I.Q. As mentioned earlier in this chapter, the I.Q. of most children is relatively constant. That is, a boy who at 8 has a mental age of six is not likely to show any later period of rapid mental growth which brings him up to average. As shown in Chart 16, considerable shifts may occur, however.

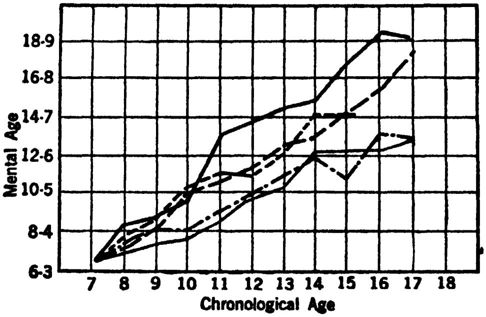

CHART 16.—Variability in mental growth of five boys whose mental test scores and intelligence quotients were equivalent at age 7. (14, p. 329.)

When these five boys were all 7–0 years old chronologically, they all had the same mental age of 6–5 and hence the same I.Q. of 92. But ten years later one of these boys tested at only 13–6, whereas another was five and a half years further ahead according to the tests and showed a mental age of 19. "Since these cases were drawn at random and there was no selective factor other than identical mental ages at identical chronological ages, we may assume that such variability is a common occurrence—a fact which numerous other graphs corroborate and which further statistical studies have emphasized" (14, p. 329).

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[10] The curves for the English data show mental growth as beginning slowly; "to assume that growth . . . starts suddenly at birth with maximum speed seems scarcely plausible" (8, p. 644). For an excellent technical treatment of the growth curve the reader is referred to (8), pp. 634–657.

Growth in Special Abilities.—Chart 17 shows growth curves for certain special abilities which are similar in general trend to the curves for general ability exhibited in the preceding section; growth is rapid and fairly consistent through the years of physical growth, and tends to level off with the approach to physical maturity.

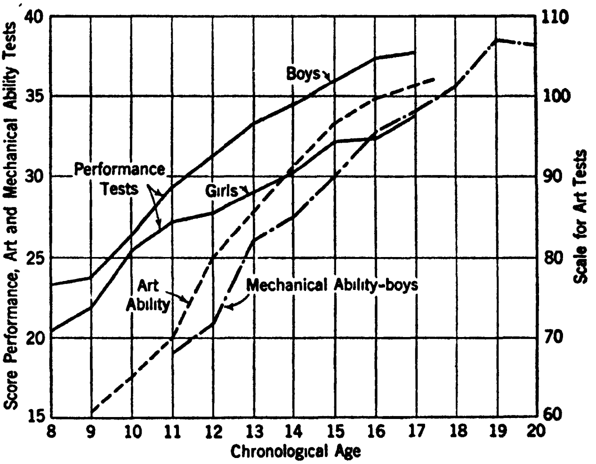

CHART 17.—Growth in abilities as shown by (a) a series of performance tests (Ferguson Form Boards), (b) tests in abilities in visual art (Lewerenz), and (c) tests in mechanical ability (Minnesota Mechanical Test Battery A). (Adapted from data of Louise Wood and Edythe Kumin, A new standardization of the Ferguson Form Boards, *J. Genet Psychol.*, 1939, *54*, 265–284; D. G. Paterson, *Minnesota Mechanical Ability Tests*, p. 345; and the normative data of the Lewerenz tests.)

THE DISTRIBUTION OF ABILITY

As was mentioned at the beginning of this chapter, everyone recognizes that some people are more able than others. But how much do people differ in ability? Are the very stupid a distinct group like dwarfs or cripples? Are very bright children so rare that schools need ordinarily make no special plans with reference to them? How many very bright and very dull people are there? What differences in ability may be found between different occupational groups, neighborhoods, or communities? Data on these questions will now be briefly summarized.

Range and Classification of Ability.—Chart 18 exhibits both the great extent to which individuals in any ordinary group differ in ability and the distribution of ability in such groups. It shows results of tests of general ability for the same children at three different ages. Clearly, at each age these children differ greatly in ability. Thus some of the 12-year-olds are no brighter than the average 8-year-old child, whereas some others are as able as the average 16-year-old youngster. In terms of mental age, these differences are evidently striking. It is also clear that ability is distributed, like height and weight, in a bell-shaped or "normal" curve. There are no separate groups of very bright or very dull. Most people are about average in ability. As one goes further away from the average, he gradually finds fewer individuals. But there are many who are sufficiently above or below average so that they present distinct educational problems. Thus there are many 12-year-olds whose mental ages are two or more years below average for their group, and many who are two or more years above that average in general ability.

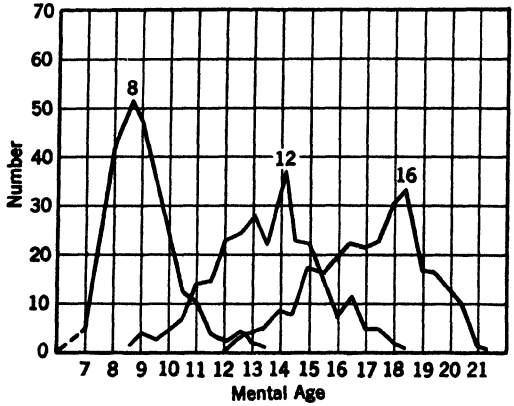

Chart 18.—Distributions of mental ages of 167 girls at ages 8, 12, and 16. (From [14], p. 325.)

It is clear that there are no distinct breaks between individuals who might be considered feeble-minded or very superior and the great group of average persons, but it will be a practical convenience to classify individuals into groups according to ability. Table 6 shows a commonly used classification according to I.Q. Approximately 80 per cent of all children are put in the three "average" groups, with 10 per cent above and 10 per cent below. It will be clear from Chart 18 how arbitrary those divisions are. And the reader will understand that the statements about educational and vocational possibilities are even more rough, especially since many factors besides ability are here important. Not all children with I.Q.'s above 120 should attempt to enter a profession; some industrious fine personalities of relatively average ability may. But it is foolish for parents of a child with an I.Q. of 80 to try to send him to college and expect him to become an engineer. It is a waste of human resources if a poor child with an I.Q. of 140 leaves school for a "blind alley" job at 16.

TABLE 6.—Classification of General Ability as Measured by the Revised Stanford-Binet Scale, with Approximate Academic and Vocational Possibilities of Each Group[11]

I.Q.	Percentage of Children[a]	Adult M.A.	Classification	Academic Possibilities	Vocational Possibilities
140 and up	0.6	21 and up	Very superior	Graduate	Professional, executive
120–139	9.9	18–0 to 20–11	Superior	Technical	Professional, technical
110–119	16.0	16–6 to 17–11	High average	College	Technical, business
90–109	47.0	13–6 to 16– 5	Average	High school	Clerical, skilled
80– 89	16.0	12–0 to 13– 5	Low average	9th grade	Semi-skilled
70– 79	7.5	10–6 to 11–11	Inferior	7th grade	Routine work
60– 69	2.4	9–0 to 10– 5	Borderland deficient	5th grade	Unskilled labor
50– 59	0.5	7–6 to 8–11	Deficient	3rd grade	Simplest labor
Below 50	0.1	Below 7–6	Very deficient	Special class	Unemployable

[a] These percentages will be found to be approximate for white children of school age whose parents are native-born. They are calculated on the assumption of a normal distribution with a standard deviation of 16 points of I.Q. The adult "mental ages" are the Stanford-Binet mental age scores that these children will have to obtain to have the same I.Q.'s respectively that they had as children.

From the above comments it should be clear that feeble-mindedness should not be thought of simply in terms of score on a test. A total consideration of an individual's ability to get along in the world is involved. A feeble-minded person is one who cannot get along or "conduct his affairs with ordinary prudence" and is incapable of learning to do so.

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[11] The table is adapted from material in M. A. Merrill, The significance of I.Q's on the revised Stanford-Binet scales, *J. Ed. Psychol.*, 1938, *29*, 641–651; M. Teagarden, *Child Psychology for Professional Workers*, Prentice-Hall, New York, 1940, p. 405; and Douglas Fryer and E. J. Sparling, Intelligence and occupational adjustment, *Occupations*, 1934, 12, 55–63. The writers wish to express their obligation to Dr. Francis N. Maxfield for his aid in the preparation of this table.

Tests will usually be a central means of determining such facts, but much more evidence than score on tests must be available if an individual is to be so classified.[12]

The feeble-minded are usually classified into three groups. Lowest are the idiots, who cannot even look after their own bodily needs but must be kept clean and fed and looked after throughout their whole lives. They never reach a mental age of over about two years. Imbeciles are a little better. They can talk and protect themselves from ordinary dangers and learn a few simple skills. But they cannot earn a living, have little grasp of the ordinary rules of conduct, may be almost without inhibitions. In school, they cannot learn to read or write—though a patient teacher may train one, somewhat as a parrot is trained, to read and write a little in mechanical fashion. Imbeciles never reach a mental age of over six or seven. Morons are the highest group of those who may be considered feeble-minded. Morons can learn to read and write, and may earn a living at simple tasks. However, they seem incapable of planning or judgment and cannot manage their affairs with "ordinary prudence"; they are easily taken advantage of, often slightly inhibited by social pressures, and thus frequently become delinquent. Usually they never develop in mental age beyond nine or ten.

Relations of Socio-Economic Status and Ability.—Table 7 shows findings typical of many investigations regarding the relation of socio-economic status and ability. A large number of children who had been given the revised Stanford-Binet tests were classified according to the occupation of the parents, and the average I.Q. of each group was then found. Children of professional men average 20 points higher in I.Q. than children of day laborers.

It should be noted that the differences are about the same for the older as for the younger groups; if home conditions were the chief cause of the differences, they might be expected to increase with age—with the length of time the home influences had operated. As it is, these differences might be attributed to superior constitutional capacity in families of higher socio-economic status. Anyhow, the table shows only averages; there are nevertheless many bright children from poor homes, and dull ones from families of prominence. Chart 19 brings out the extent of such overlappings.

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[12] There *should* be as broad a consideration of the very capable children. They should be differentiated as not only high scorers on tests but also individuals of special balance and good judgment. And they should receive as much careful study and have as many special efforts made to develop *their* full potentialities as is at present the case with the feeble-minded and the delinquent. The returns from such special efforts to deal adequately with the very able would be many times as great as from such investment in the most stupid.

TABLE 7.—Mean I.Q.'s of the Stanford-Binet Standardization Group Classified by Father's Occupation[18]

Father's Occupation	Mean I.Q. by Chronological Ages, Years				Unweighted Average
	2–5½	6–9	10–14	15–18	
Professional	116	115	118	116	116
Semi-professional and managerial	112	107	112	117	112
Clerical, skilled trades, retail business	108	105	107	110	107
Rural owners	99	95	92	94	95
Semi-skilled, minor clerical, and business	104	105	103	107	105
Slightly skilled	95	100	101	96	98
Day laborers, rural and urban	94	96	97	98	96

Urban children (from any area with a population density of 1000 or more per square mile) average 106 in I.Q. as compared with 99 for rural youngsters. But the distributions overlap completely. Obviously the fact that a boy is from the country does not warrant his being forthwith dubbed dull. He may be right up with the brightest city boys; furthermore, some city boys are very stupid.

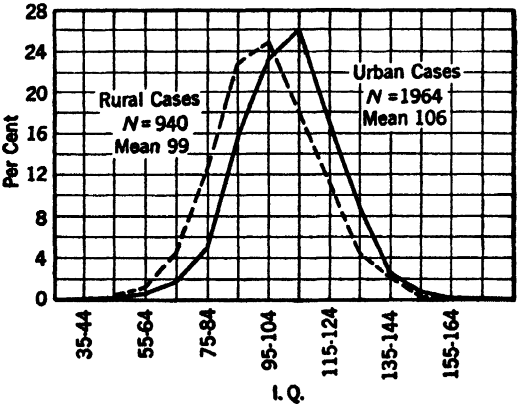

CHART 19.—Distribution of I.Q.'s of rural and urban groups on the revised Stanford-Binet Scale. (From [54], p. 49.)

In fact, though very bright children may be found proportionally more often in city homes of professional or business parents, nevertheless most bright youngsters may not be in such homes. For these families are only a small proportion of all the families in the country, and they have even fewer children. There are, in total, many bright children in the country, and in poverty. The wise teacher will ever be on the lookout for them everywhere. They are her great opportunity; with them she can find great usefulness and joy.

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[18] Modified from (54), p. 48.

Table 8 presents a commonplace finding of every school survey, but nevertheless one of great practical importance. It shows results with a group test of general ability for the sixth-grade classes of two schools in the same city, and demonstrates how much two schools may differ in the abilities of the children attending them.[14]

TABLE 8.—Variability in Scores in General Ability of Two Sixth-Grade Classes from Different Sections of the Same City

	Score												Total	Median
	40	45	50	55	60	65	70	75	80	85	90	95		
School A	2	4	5	7*	4	5	4	1	1		1		34	59
School B			1		3	5	2	11*	6	2		2	32	77

The unhappy young teacher in the first school was finding her class slow, stolid, and hard to teach, but in the second school the youngsters were lively and learned readily. Observation of the neighborhoods in which the two schools were located would lead one to expect what the result showed. The first school was in a part of town near a factory employing chiefly unskilled labor; the second, in a good residential section. The teacher in the first school was seriously handicapped by the poor "pupil material" in her school. Only one pupil in the second class scored below the median of the first. Actually the pupils in the sixth grade in School A were only as able as the students in the fourth grade in School B. No wonder her pupils did poorly on tests of reading and arithmetic and history. The supervisor had inferred she was a poor teacher. Rather it was the pupils who were poor. When this teacher saw the results of the tests of ability she almost wept from relief; she had thought herself a failure and had expected to lose her job.

Every teacher and every school official should keep in mind the possibility of such differences in the abilities of the pupils with whom he or she is concerned. Frequently the children in one school are found to average two years in mental age brighter than those in another school in the same community. Two first-grade classes may differ as much as 35 points in median I.Q. (54). Rural schools may differ almost as much, children in prosperous farming areas testing higher than those in poor rural districts. The teacher who does not recognize such differences and adjust her program of work and her methods accordingly is bound to have trouble.

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[14] The table shows that two pupils in the first class scored between 40 and 44, four children scored in the 45–49 group, and so on. An asterisk marks the group in which the median falls, in each class.

One of the writers well remembers a one-room back-country school visited in a school survey, in which a third of the children tested as mentally defective; all these were siblings or cousins.

Children from better occupational groups and neighborhoods thus average higher in general ability than those from less favored situations. These differences might be due to more favorable conditions in the better socio-economic groups as regards health, diet, and living conditions, reading matter, and education of parents, which fostered the abilities of these children. Or parents with good constitution and intellectual capacity may tend to go into the better jobs, neighborhoods, or farming areas—and have children who inherit their good native capabilities. In so far as this last hypothesis was true, the favorable conditions would be not the cause of the children's better abilities but only a concomitant circumstance. Data on this question will be returned to shortly.

Family and Ability.—Many investigations have found that ability, or the lack of it, tends to run in families. Seventy years ago Galton reported that an eminent man was 130 times as likely to have an eminent male relative as was the average man. Terman made an intensive study of 643 "gifted" children with an I.Q. of 140 or higher, and found that in their family trees were six signers of the Declaration of Independence, two Presidents of the United States, and many other eminent people; these children "came predominantly from family stocks of decidedly superior intellectual endowment." The average I.Q. of the siblings (brothers and sisters) of these children with I.Q.'s above 140 was 123, or "almost exactly what would be expected if the correlation between siblings in the general population were in the neighborhood of .45 or .50" (39, Part I, p. 67). At the other extreme, one investigator reported regarding a group of mentally defective mothers that 44 per cent of their children were mentally defective (21, p. 715), or at least twenty times as many as in the general population. Feeble-mindedness as well as eminence seems to run in families. The history of such families as the "Jukes" and the "Kallikaks" is a sordid record of educational and economic failure and of illegitimacy, delinquency, and other evidence of mental defect.

Table 9 exhibits the increase in similarity as regards ability, in a family, with closer relationship. It summarizes results of twelve different investigations and includes correlations for physical as well as mental measures.

All these various studies show family resemblance in ability. But what are the important causes of these resemblances? An inherited constitutional capacity is at once suggested as the important factor. But identical twins in the same home who look so much alike that they are often mistaken for each other[16] are surely subject to such a similarity of influences that much similarity of abilities might be thus caused. All the people in the same home live under largely similar physical, socio-economic, and cultural conditions. Two children of the same intellectual constitution would certainly develop somewhat different abilities if one grew up with the best of care and schooling in the home of a California professional family and the other lived a half-sick, half-starved existence in the shack of an illiterate southern sharecropper. How much difference do such factors make? This is a vital question for education, and it must now be considered more closely.

TABLE 9.—Correlations Found Between Related Pairs of Persons, Northern European Stock, in Twelve Different Investigations[15]

	Physical Measures	Mental Measures
Unrelated children		−.19 to .09
Cousins		.27
Parents	.00 to .15	.46 to .49
Parent-child	.42 to .53	.45 to .55
Siblings, same home	.42 to .53	.45 to .55
Non-identical twins	.58	.53 to .70
Identical twins	.91	.88 to .97

THE EFFECTS OF VARIOUS INFLUENCES UPON ABILITY

The question may well be rephrased thus: To what extent may it be hoped that ability can be improved by improvement of children's health, living conditions, or schooling? Here is indeed a vital question for education.

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[15] Adapted from (21, p. 716).

[16] Dr. F. N. Maxfield tells of a number of instances where one identical twin, catching a glimpse of himself in a mirror, has thought that it was the other twin and spoken to him or advanced to meet him.

Health and Ability.—As was mentioned earlier in the chapter on physical growth, good ability and good physique tend to be found together. Intellectually superior children tend to be taller and heavier than average children and to reach puberty sooner, whereas dull and feeble-minded children tend to be below average in size. Physical defects such as infected tonsils and malnutrition are somewhat more common among dull than bright children. Thus of over 14,000 children covered in one investigation, those with I.Q.'s of 110 or over averaged 1.6 physical defects of some sort, those with I.Q.'s in the 80's averaged 1.6 defects, those with an I.Q. in the 60's averaged 2.1 physical handicaps of some sort, and children whose I.Q. was below 50 had 3.1 defects (13). However, the correlations between either size or number of physical defects and ability are so low that no inferences regarding ability are warranted from an individual's physique.

Further, it must not be assumed from such association as does exist between physical condition and ability that improvement of physical condition or remedy of physical defects can be counted on to improve ability. Thus removal of diseased tonsils has not been found to cause any increase in I.Q. Nor has remedy of malnutrition been found thus to benefit. For instance, 25 underweight children were for six months given school lunches and health lessons and motivated to improve their physical condition. They gained in weight 26 per cent more than a control group that had no such program, but intelligence test scores showed no corresponding gain. Investigators have, however, found improvements in schoolwork as a result of school health programs. This apparently was due to greater energy, interest, and wide-awakeness (and to more interest in and consideration of the child on the part of teachers and parents as a result of their participation in the program!) rather than to any increase in the children's ability (23).

Health records during the first six years have been reported as having no correlation with mental test scores (39, Part II, p. 50). However, certain very serious or debilitating diseases may apparently have determinable effects. Thus those children most heavily infested with hookworm, of 117 pupils in three southern rural schools, averaged 14 points in I.Q. below the pupils without hookworm. Pupils with moderate infestation averaged 6 points below, and those with light infestation 4 points below the healthy pupils in these schools (50). But no evidence was obtained as to whether treatment for hookworm would increase I.Q.

Marked handicaps such as deafness seem to be related to ability, but just how is not clear. Tests adapted for use with handicapped children have shown I.Q.'s for deaf children to average around 80, for blind children around 90, and for crippled pupils about 85. However, the first two groups are hard to test, even with materials especially designed for them. Some of these seriously handicapped children are almost certainly cases of general constitutional inferiority, of which the inferior ability is simply another symptom rather than the result of the handicap. But blindness and deafness cut an individual off from so many experiences that they might well be expected somewhat to restrict the development of ability.

In short, the growth of ability may apparently be stunted somewhat by some serious physical handicaps and diseases, and perhaps restricted slightly by less serious physical conditions. But results are much less than might be expected, and improvement of physical condition has thus far not been shown to improve ability appreciably.

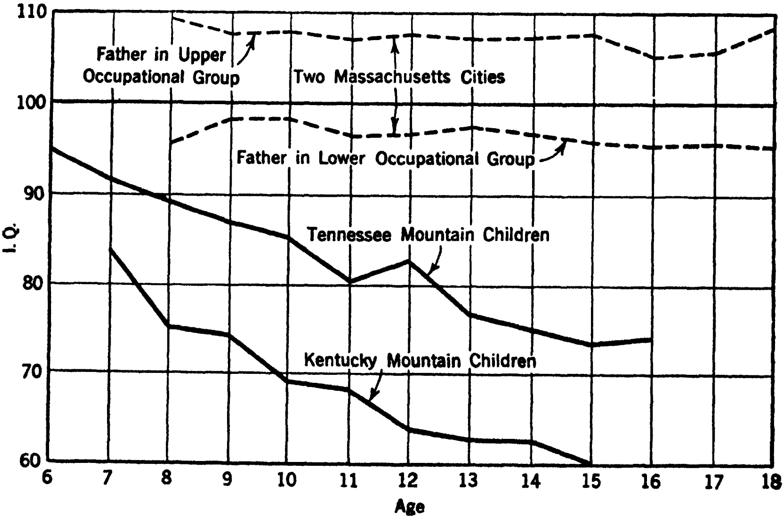

CHART 20.—The effect of relatively slight and marked deficiencies in socio-economic conditions upon I.Q. (From data of Shuttleworth [48], Wheeler [61], and Asher [2].)

The Effect of Socio-Economic Conditions upon the Growth of Ability.—Chart 20 appears to show an analogous finding as regards the effects of socio-economic handicap. In the grossly inadequate environment of the southern mountains, children apparently drop more and more behind the average child as they grow older.[17] But the boys in the two cities near Boston were all from a similar lively urban environment. And the possible "mildly stimulating" socio-economic status of the 53 boys whose fathers were in a profession or a good business position seemed to have no progressive effect upon the development of their general ability as compared with the possible "mildly repressing" home and neighborhood circumstances of the boys whose fathers were semi-skilled or unskilled laborers.

At the beginning (that is, at the age of 8) the two Massachusetts groups were different presumably because of differences in the constitutional capacity of their families, and possibly in part as a result of earlier childhood influences. But at least from 8 on, the differing socio-economic status of these two groups did not cause them to move further apart.

Similar conclusions are suggested by the fascinating and dramatic research regarding identical twins reared apart. Gladys and Helen were identical twins who were separated at 18 months of age and did not meet again till they were 28. Helen's foster parents were determined that she should have a good education; the girl graduated from college and became a teacher. But Gladys spent most of her childhood in an isolated district in the Canadian Rockies, never had an education beyond the third grade, and went to work as soon as she was old enough. When they were tested (as adults), Helen had an I.Q. of 116 but Gladys' was only 92. On the other hand, twin boys reared one in the country and one in a city, but in homes apparently roughly similar in socio-economic status, made almost the same mental test scores although one had had a little more education than the other.

Will marked change in a child's conditions of life change his tested ability? On the whole, the evidence is that it will—at least a little. Table 10 summarizes data from a typical study. A group of 74 children were tested shortly before being adopted and were tested again after an average of four years in the foster home. The average age at the first test was 8 years. The table shows (1) that children placed in good homes improved measurably more than those in poorer homes, and (2) that younger children benefited more than older children. Other evidence indicates that yet earlier adoption, as in the preschool years, would probably have resulted in greater gain.

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[17] It might be argued that the decrease is due to the undoubted fact that the tests were less satisfactory for mountain children (and more generally for rural children) at the older ages. Such considerations must not be forgotten, but the findings can hardly be dismissed on such grounds. The range of material in this interesting chart must be emphasized. The 339 Kentucky children were given the relatively simple straightforward Myers Mental Measure, the Tennessee children the more varied Dearborn group test, and the Massachusetts boys a variety of group tests of general ability. Different mountain children were tested at each age, but the same Massachusetts boys were tested every year for ten years. The variety of the data here compressed into a single chart, all bearing on the same problem and yielding a nice balance of conclusions regarding it, would appear exceptional. What this balanced conclusion should be is a matter which will be discussed shortly.

TABLE 10.—Effect of Good and Poor Homes on the Measured Intelligence of Foster Children [18]

Home Rating	No. of Cases	Pre-test (I.Q.)	End Test (I.Q.)	Gain
Good	33	95.2	100.5	5.3
Poor	41	88.0	88.1	0.1

Relation of Age of Placement to Gains in Intelligence Made by Children Placed in Foster Homes

Age on 2nd Test	No of Cases	Pre-test (I.Q.)	End Test (I.Q.)	Gain
Over 12 yrs. 4 mo.	37	89.7	89.3	−0.4
Under 12 yrs. 4 mo.	37	92.8	98.0	5.2

What is meant by a "good" home, in such studies? In the above investigation homes were judged on a rating scale which took account of the neighborhood, the size and comfort of the building and the condition in which it was kept, the nature and amount of reading matter, the education and social life and the congeniality and kindliness of the foster parents. Other studies suggest the importance for a child of contact with and friendly attention from adults, a variety of toys to play with and of things to do, and friendly encouragement in and opportunity for a variety of stimulating experiences (57).

Is a good institution better than a poor home? Chart 21 indicates that it is. The plan of the investigation was simple. Fifty children, mostly between 8 and 12 years of age and considered high-grade morons or borderline defectives (with an average I.Q. of 67), were tested at intervals of several years prior to admission to an institution for the high-grade feeble-minded, and at intervals after admission. The chart shows that while in inadequate homes and presumably inadequate neighborhoods the youngsters showed a progressive decline in I.Q. But after they came to the institution this decline was arrested and the trend reversed. Other investigations have indicated that a poor institution retarded the development of ability. But in this excellent institution for high-grade moron and borderland cases efforts were made to stimulate constructive activity, to approve work, and to have available a variety of opportunities.

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[18] Adapted from (18).

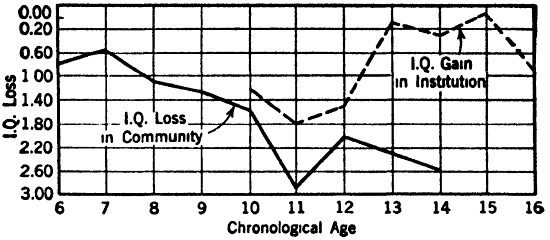

CHART 21.—Gradual loss in I.Q. while in a poor home, and gain when put in a good institution, of 50 high-grade moron and borderline cases, as shown by repeated tests. (Adapted from Kephart, [39], Pt. I, p. 226.)

Fifty-one other cases who showed evidence of brain damage due to injury or to disease like syphilis exhibited less loss in I.Q. in the home and no recovery in the institution. But the cases shown in the chart were rather to be described as mentally retarded, and the poor home environment had apparently been a factor in the retardation.

The Effects of Schooling upon Ability.—Attention must now be turned to a question important indeed for teachers—the question as to whether schooling may raise ability. Again the problem is controversial and the evidence contradictory. The two investigations summarized in Table 11 may serve to illustrate both methods of research regarding the problem, and certain of the findings. Apparently the below-average orphanage children gained distinctly as a result of the nursery school program. But for children already superior and from superior homes, nursery school made little difference as regards growth in ability, though gains in social adjustment may have been made.

The orphanage group consisted of 17 youngsters just entering nursery school and 17 other orphanage children paired with them as to sex, chronological age, standing on the Merrill-Palmer scale of mental tests, and institutional experience. After the first group had been in nursery school about eight months all the children were tested again. Both groups scored higher on the second test—perhaps as a result of experience with the scale. But the nursery school group gained distinctly more.

The method in the second study was essentially similar. The nursery school children entered at about 30 months of age and were tested then; they attended an average of about five semesters and were tested at various times up to about 8 years of age. They were paired with two control groups, totaling 52 cases, on the basis of I.Q. at the beginning and of parent's education. In contrast to the orphans these two groups were above average in ability at the beginning. Both groups gained in I.Q., presumably because of "increasing assimilation of the relatively high cultural levels" of their superior homes and the "intrinsic growth characteristic of an innately superior group," as well as experience with the tests. The extra gain of the nursery school children is so slight as probably not to be significant.

TABLE 11.—Effects of Nursery School upon the General Ability of (1) Below-Average Children from a Poor Environment and (2) Above-Average Children from a Superior Environment[19]

	Orphanage			University Area			
	No. of Cases	I.Q. Beginning	I.Q. End	No. of Cases	I.Q. Beginning	I.Q. End	I.Q. 3½ Yrs. Later
Nursery school	17	92	113	29	112	126	129
Control	17	93	98	52	112	123	125
Difference		−1	15		0	3	4

May the elementary or secondary school (or college) affect ability? The little evidence thus far available is contradictory. It has already been suggested that differences among states in the average intelligence of Army draftees may have been related to differences in quality and amount of schooling in those states, and that an apparent rise in average adult ability in the past twenty years may be a result of increased schooling. However, extensive data from three well-known private New York schools showed no consistent gain in I.Q. (39, pp. 351–361). These schools served a superior group. It may well be—as suggested in considering the influence of foster homes—that the abilities of below-average retarded children might be increased slightly by schooling, though bright children from excellent homes would gain little.

The Interplay of Influences Affecting Growth of Ability in the Individual Child.—Up to now the effort in this section of the chapter has been to isolate the effects of some one factor—such as home or school—upon the development of ability. But actually various influences operate in various ways and at different times upon an individual. Only by intensive study of individual children over a period of time can something of the total dynamics of mental growth be appreciated. Chart 22 shows, in terms of variation from the average tested mental ability at each age, the mental growth of three children from infancy to 9 years of age. After an early superiority, Richard dropped more and more below average. From a poor start Caroline rose to the best status. From most able (on the tests used) Lawrence dropped to mediocrity. The life history of each appears largely to explain all these trends and shiftings about, and to make more understandable the total process of mental growth.

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[19] Adapted from (3), and from (39), Part II, pp. 207–222.

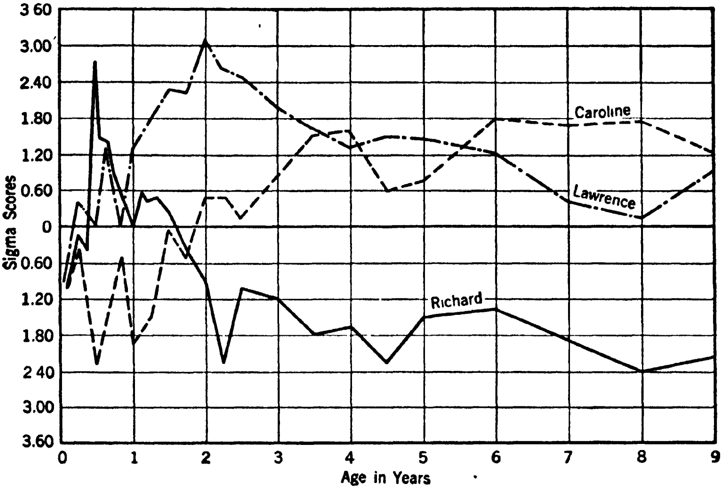

CHART 22.—Individual trends in mental scores. (Adapted from Nancy Bailey· Mental growth in young children, [39], pp. 23, 24, 26.)

Richard's parents had only an elementary school education. The father was a lumberyard worker who died when Dick was 9; since then the mother has been receiving public aid. Since Dick was a baby the family lived rent-free in a dilapidated overcrowded dirty house near freight yards, with only the street and a lumberyard to play in. The only reading matter in the house was a single book given the children by a teacher. Family life was noisy and quarrelsome; Richard was the youngest child and was alternately spoiled and spanked; his teacher has described him as nervous, inhibited, and shy. He was often ill, had double pneumonia when six, is under average in height. Clearly he has been handicapped as regards health, home, and neighborhood; social and cultural experiences have been very limited; emotional experiences have been disturbing, and consistent motivations lacking. And constitutional capacity may not be good. Little wonder, then, that in spite of the good start the total trend is down.

In contrast. Caroline tested low at first: the examinations disturbed her and she often cried.[20] The parents are well educated and prosperous; the home is comfortable and well supplied with reading matter and other potentially educative materials. Since 4 she has suffered from asthma; this has required rest and thus she read a great deal. She has a very strong drive to excel, which apparently comes partly from jealousy of an older brother and perhaps also from feelings of insecurity with other children because of her restricted contacts with them as a result of her illnesses. In short, Caroline is a child, probably of good constitutional capacity, whose illness gives special opportunity for the development of verbal ability, and whose handicap and relations with an older brother combine to produce exceptional motivation.

Yet a third trend and pattern of influences are shown by Lawrence. The parents are highly educated and the home is beautiful and culturally stimulating. Presumably he has excellent constitutional capacity. Yet after a superior beginning his curve of ability steadily drops. His health was good during the first two years, but sundry illnesses then followed. The family is very artistic and musical; as early as two years of age Lawrence showed great interest in music, lying awake to hear his father play the violin. The boy early became adept at making costumes and toys, improvising dances, and painting. He enjoys performance tests but has little enthusiasm for predominantly verbal tests like the Binet. And he does not seem interested in getting adults' approval; hence he will not put forth much effort unless a task appeals to him. In short, Lawrence appears to be a boy of excellent constitutional capacity who comes from a fine home, whose development has been primarily along artistic lines which the tests do not measure.

The Comparative Importance of Various Factors in Determining Realized Ability.—It should now be possible to evaluate to some extent the comparative importance of various factors in determining the ability an individual develops. Clearly most important is constitutional capacity; if that is lacking, all other factors avail little. Somewhat as some people are by constitution short in physical stature and others tall (and no amount of food or other favorable circumstance can make them taller than they were born to be), so people differ in their potentialities for intellectual stature and cannot go beyond them. But in both physique and mentality unfavorable influences may prevent that potentiality from being fully realized. Various influences operate in complex and sometimes even opposite ways in different individuals. Thus illnesses appear to have hampered the growth of Richard's abilities but to have furthered Caroline's mental development. A cultured home developed Caroline in one direction and Lawrence in another. An older sibling stimulated a strong drive to excel in Caroline but not in the other two. Clearly mental development is an exceedingly complex process affected by a multitude of factors and often in diverse ways.

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[20] Examination of infants is of course difficult and subject to many hazards of cooperativeness and special circumstance—as in this case distraction by the presence of an older brother during some of the early tests.

THE SCHOOL AND ABILITIES

Somehow, the school should adjust to and further all the complex and diverse upsurging abilities of all its pupils. Three types of problems may be distinguished.

Administrative and Supervisory Problems.—As already mentioned, children in one school may average two years in age above children in another school in the same city. Fifth-grade children in one area of New York City averaged 74 I.Q., but in another area the average was 118 (39, Part II, p. 323). Obviously the teachers in the second district have very different problems from those in the first. Not only will the children in the second district learn much more readily, but almost certainly they will come from different types of homes and will have different vocational and socio-economic futures ahead of them. Both materials and methods of instruction, as well as standards, should differ greatly from one of these schools to the other. And if children from such different elementary school districts go to a common secondary school, many problems will be met there.

Obviously the work of every class should be adjusted in all these respects to the level in mental maturity of the children in it. Clearly the average 2-year-old child is just not mature enough in ability so that he can possibly learn to read, and it is futile to try to teach him to do so. Apparently "reading readiness" does not appear in the average child till around 6 or 7; not until then has he developed sufficiently in his capacity for such learning of symbols, or in his experience with words and meanings. Possibly many children's difficulties with fractions come in part from introducing that topic before they are sufficiently mature; they have not yet reached "fraction readiness."

Problems of Adjustment to Individual Differences in Abilities.—Table 12 shows a situation that is found in most schools. Some of the first-grade children are mentally only 3 years old; obviously they are not yet sufficiently mature mentally to be ready for beginning reading. In contrast, the brightest first-grade child is up with the fifth graders in mental age, and the first-grade classwork probably seems to him unutterably infantile—somewhat like what the first grade would seem to an average fourth-grade boy. The brightest fifth graders are up with the high school ninth-grade average in mental age.

Table 12.—Percentage of Children in the First, Fifth, and Ninth Grades of a School at Each Mental Age [21]

	Mental Age																	
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Median
First	3	15	21	34	21	4	1	1										6.2
Fifth					1	1	13	33	22	16	8	4	2					11.1
Ninth										2	7	23	23	21	14	8	2	15.8

Clearly a situation like this must not be dealt with by such radical measures as shifting a bright fifth-grade boy up to an adolescent ninth-grade group where physically and emotionally he would be greatly out of place, or humiliating the dull fifth grader by thrusting him into the company of first-grade babies. So far as possible each pupil should be studied and the school situation adjusted to his needs.

As has already been mentioned, bright children tend to be taller and heavier, and reach puberty earlier than the average child; they also tend to be more mature in interests and social development. In every respect except birth date they *are* older. They should therefore be with children of the same developmental age rather than simply the same chronological age. Thus big, lively, self-confident Ruth, youngest of five children of a professional man, started school in the first grade just before her sixth birthday. She returned home bursting with complaints: the other children were "such babies," the work was "silly." Quietly shifted to the second grade, she soon took a position of leadership, though still finding things too easy. But slight, anxious William, twice double-promoted by overambitious parents, is resented by the other boys in his class and can't hold his own in rough play. Soon he will move into secondary school where, a child among adolescents, he will be even more a misfit.

In the same first-grade class which Ruth scorned was little Jennie. Listless and thin, she took no part in what was going on either in class or on the playground, and became increasingly discouraged and out of touch with things as the weeks passed. She was clearly not yet ready for the work of the usual first grade and might better have spent the year in a kindergarten or pre-primary group. In the same sixth-grade class with William was a big sour fellow who was in the group but not of it. A 14-year-old

[21] Adapted from L. M. Terman, The use of intelligence tests in the grading of school children, *J. Educ. Res.*, 1920, *1*, 20–32.

lad among 11-year-olds, he had three times repeated a grade. Dull though he is, he is brighter than the educational system of which he is the victim. That is, he has sensed that the conventional school program is not suited to him and has simply stopped trying. But the school system has *not* yet sensed that unsuitableness! However, the school did better with Joe, whose family has just moved to town. His I.Q. was found to be 86 and his scores on subject-matter tests rather low; the school nurse reported him underweight and undernourished. Though he is a year older than the average boy in his class he fits in better with them than he would with his own age group in the next grade above.

In short, a school may make some adjustment to differences in ability by moving bright children through the conventional program somewhat faster and dull children somewhat slower than average. But it must be careful that social maladjustment is not brought about thereby, nor feelings of conceit or inferiority. Furthermore, the school class in which the child is put may not be much better suited to him than that in which his chronological age would place him. Thus the work of the third grade is no better suited to big sour William than is that of the sixth; he needs a special program, largely of pre-vocational handwork, to fit him for the kind of simple job to which he will go before long.

Instead of the rate of movement through the school program being varied, all pupils of the same age might be kept together but the work individualized, each child so far as possible doing what is best suited to his abilities and interests at his level. But this procedure also runs into difficulties. Children *do* develop at different rates, and chronological age is a crude basis of classification which neglects this fact. The burden on the teacher is great.

Miss Jones is working early and late, trying to individualize the work of her sixth-grade pupils. She has an "enriched" program of special reading for brilliant Jeannette. But the girl is unappreciative. "Why should I be asked to do a lot of extra work just because I'm bright!" she says angrily. She is big for her age and has already reached puberty; she feels out of place and wants to be in junior high school, where most of her friends are. Little Marie is not so dull that she does not uncomfortably sense how things are being made especially easy for her; much of the time she feels uncomprehending and left out; when she can, she plays with younger children.

A compromise of sorts regarding these various difficulties may be reached by ability grouping. Thus there may be slow, average, and fast sections or classes. The first group has "minimum essentials" and may take seven years for the first six grades. The fast section may do these same grades in five years with an enriched program. But unfortunate attitudes may be set up in both children and parents by this grouping, the bases for which may be recognized. And marked individual differences will still remain within each group. Nevertheless, different classes and programs may make possible a more adequate meeting of different needs than would otherwise be possible.

For best adjustment to ability, the following seem required: (1) Total development in physique and social status as well as ability must always be taken into account. (2) Flexibility should be great, and adjustments of various kinds so common as to be taken for granted. Thus some acceleration of children of all-round superior development should be common enough not to arouse comments; extra time and help and a somewhat different program for those having some difficulty should also be a common and accepted thing in the school. Flexibility is especially important in view of the recent evidence that individuals may differ in rate of mental growth from time to time (see charts 16, 18, and 22). (3) Not simply differences in amount or rate but rather differences in type of education according to need is the most important consideration in adjusting education to abilities.

Twelve-year-old Sam (I.Q. 78) is one of the large family of a factory worker just moved into a ramshackle house on the edge of town. Sam reads only very slowly, is dirty, frequently truant, and tough; as soon as possible he wants to leave school and get a job. Raymond (I.Q. 128) is also 12; he is an only son of the town's leading lawyer, finds school too easy for his own good, and is a little slick; he plans to enter his father's profession. Sam needs tactful help on care of his person and on manners and conduct. He needs companionship with other boys not so different from him but that he can be comfortable with them. He needs special help on reading. Planning with reference to pre-vocational courses in junior high school is in order. Raymond's personal and educational needs are very different. It will be much easier to help Sam in a small "adjustment" class made up mostly of other children of war industry workers recently come to town than in a heterogeneous group that throws all these pupils together.

The Nurture of Abilities.—It was argued at the beginning of this chapter that the abilities which an individual showed in dealing with problems depended most upon his constitutional capacity and also upon his fund of relevant information, his efficiency in attacking problems, and the extent to which his emotions stimulated or interfered with his efforts. Experiments were cited to indicate that unfavorable conditions might limit the growth of abilities and that improvement of those conditions might bring about more growth. Growth of ability, as of any organic entity, depends upon both heredity and environment. In the last section detailed case studies suggested that more adequate knowledge of these processes of growth might make it possible for the school still more to further them.

Thus 12-year-old Sam mentioned in the preceding paragraph might gain nothing and even be antagonized and discouraged by a conventional school program. But if his reading difficulty were remedied, his confidence restored, and his interest stimulated by work which he felt he wanted to do, his abilities might grow appreciably (perhaps his I.Q. might go from 78 to 85, or from "inferior" to "low average")—somewhat as he might grow in physique if given an adequate, vitamin-rich diet instead of the greasy fried stuff which was his usual meal at home. In neither physique nor ability could he exceed his constitutional potentialities, but in both respects there was room for decided improvement.

Chapter II mentioned that, presumably as a result of better nutrition and conditions of living, college students of today are over an inch taller and several pounds heavier than their parents. As mentioned earlier, adult "intelligence" in this country seems to be higher now than twenty years ago, possibly as a result of the increase in time and resources devoted to education and the rise in the general level of culture in this country over that period. Surely, further gains in average ability may be expected in the future.[22]

SUMMARY

The topic treated in this chapter is complex and the materials presented do not always permit clear-cut conclusions. But when the material is reviewed, certain general trends and conclusions appear with some clearness. They may be briefly summarized as follows:

1. In everyday life the meaning of ability is fairly well understood: an individual's abilities are shown by the extent to which he can deal effectively with situations and problems in his daily life. Four major factors affecting ability can be fairly well distinguished. Some individuals are more and some less informed about the problems with

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[22] For an interesting discussion of this question, see the material on "Nature and Nurture" in W. S. Monroe (ed.), *Encyclopedia of Educational Research*, Macmillan, New York, 1940.

which they have to deal. Some tackle those problems with more and some with less effective methods. Some are stimulated, but others are distracted or blocked by emotional situations. And—most important of all—some individuals constitutionally are more and some less capable. These four factors are fairly generally recognized as involved in ability in general. Similar factors are involved in special abilities or disabilities. Thus the person with great artistic ability has usually had much acquaintance with art, has artistic "know how," has great interest in art, and also innate capacity possibly of a somewhat special nature. The individual who is especially lacking in mechanical ability usually has had little opportunity to become familiar with mechanical devices, has not learned how to "take hold" of mechanical problems, feels hesitant and timid about dealing with machinery and tools, and perhaps may lack some special aptitude in such matters—though usually the first three factors account for the difficulty.

2. Appraisal of a pupil's abilities may be made by a teacher on the basis of her total acquaintance with him. But such judgments (even though guided by the use of rating schemes) are subject to errors of prejudice or inadequate information and are at best rough and hardly comparable from one teacher to another. Various tests have therefore been developed. Interview examinations like the Binet are given to individual pupils by specially trained examiners; their results have comparatively high accuracy. There are also group tests which can be given to entire classes at one time, and tests of special abilities or disabilities as in arithmetic, reading, music, or mechanical aptitudes. Such tests have great value. It must be realized, however, that persons in some respect especially handicapped (for instance, by deafness or by living in some extremely isolated section of the country) cannot be measured entirely satisfactorily by such instruments.

3. Abilities grow and reach an adult level, much as physique grows and matures. There are great individual differences in growth. The feeble-minded have a slower growth rate as well as a lower level of maturity, whereas brilliant children's abilities usually show both rapid and early growth. During the school years the abilities ot pupils are thus constantly growing but at different rates in different children and with great individual differences at any given age.

4. People vary enormously in ability—from the idiot to the genius. In general, people in better socio-economic groups are apt to show better ability. And, as a rule, ability appears to run in families.

5. In general, ability appears to be relatively unaffected by health.

But early and debilitating illness or accident probably does hamper the growth of abilities. A very inadequate home or neighborhood environment or inadequate schooling may handicap the development of ability somewhat. However, the major factor in mental growth is quite clearly constitutional capacity or potentiality. Favorable circumstances may assure the realization of the individual's potentialities but those potentialities can hardly be increased.

6. Different schools show differences in the average ability of the children. In a given class the children vary greatly in ability. Different grades markedly overlap; thus some third-grade children may be above the average sixth-grade child in ability. Such a child cannot be advanced in school in proportion to his ability for fear of social maladjustment. But maladjustment will also follow if each child's ability is not recognized. A flexible system of progress through school which will take account, with the best compromise possible, of each child's total stage of development seems best. It must be recognized that children of different abilities have different futures to prepare for. A bright child is headed perhaps for a profession; a dull child, toward some type of unskilled work. Though constitutional capacity cannot be increased, by bringing it about that children will more adequately realize their potentialities an increase in the general level of abilities is possible.

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CHAPTER V

Interests: Their Nature and Nurture

*As emphasized in Chapter II, the school years are a time of extraordi*nary upsurging growth; from 6 to 18 the youngster triples his weight, increases in strength still more, is physiologically made over in proportion and tissue. It is inevitable that such a dynamic expanding organism should have strong wants and desires, and be exuberantly active, like a puppy. What are these wants and desires, and what directions do these activities take? These questions might seem relatively simple. But education has shown an amazing capacity for either neglecting them or assuming wrong answers—or even doing both things at once!

The problem is a very practical one for every teacher. She wishes to find the interests of her pupils and to relate the school work to those interests. She wants her pupils to be active in the work of the school. If she bores them or tries to get them to do what is not natural to them (or, worst of all, tries to make these wriggling human puppies be still), there will be trouble. The pupils will not learn. They are likely to be unruly. Here are the difficulties which most commonly cause teachers to fail.

A careful empirical inquiry as to children's interests and "natural" activities would thus seem worth while. The children may be asked what they like to do, or they may be watched to see what they do when they are free to do as they wish. Data may be gathered as to what they read, or say they enjoy reading. Similar data may be gathered about radio programs or moving pictures. An apparatus may be used that literally measures which movies stir their pulses most. The topics they choose for school themes may show what concerns them. The investigator may even go straight up to them and ask in so many words what their interests are. The results of these various inquiries must now be looked at.

Like the shrewd little sinners they are, children will often deceive the investigator. They will check Shakespeare as much liked and never mention *True Romances.* The blunt investigator may find few high school girls checking "sex" on an interest questionnaire. Often the investigator will be puzzled as to whether an activity is to be considered a basic interest or only a fad or fashion. Many children seem to have no interests of their own but simply go along with the situation in which they find themselves—playing whatever games others may suggest, reading what may come to hand (and is easy), seeing whatever is showing at the local movie house, tuning in whatever may be on the radio at the moment. But from careful sifting of the total mass of all such data information of great value may well be hoped for.

PLAY

If play is defined as what a person does because he likes to, a survey of play might be expected to suggest something as to what those likes may be, and what activities are natural and pleasant. Such surveys may be made in various ways. Children may be watched when at play to see what they do. They may be asked to list things they like to do, or to check, on a list of play activities, what they like or do frequently. Play of different individuals, neighborhoods, communities, nations, or races may be compared to see what characteristics seem universal and presumably basic, and what factors influence it. From the total of such data, valuable understandings of child nature should come.

The topic is a fascinating one for retrospection upon one's own childhood. The reader will find it interesting to go back in memory and list those things he did at various ages, in the country and city, on the school playground and in the neighborhood, in the winter and during the summer vacation. These reminiscences may well go back to an obscure memory of the pleasure, at the age of 3 or 4, of blowing a whistle or digging in the sand or scuffling through autumn leaves or wading, the later joy of running with a wagon or coasting on a sled, the satisfaction of shooting with bow and arrow or slingshot, building a hut, or inconsequential ranging through the woods. Simple games gradually appear—hide and seek, anty-over, or run-sheep-run. Later, team games, such as baseball and football, come to have a dominant appeal. And there is the new, embarrassing, exquisite pleasure of companionship with the other sex. The making and scanning of such a catalogue of childhood and youthful delights will doubtless bring no little amusement and reminiscent pleasure, with which there will be mixed a certain wistfulness and lingering nostalgia.

Changes in Play with Age.—A natural first question regards the changes in play which come with age. The baby's play will obviously be very simple. Playing with hands and feet (and seriously contemplating them) is common at 4 months. By about 6 months the youngster begins to pat the table with his hands and bang with spoon or rattle; by about 9 months he has learned that objects fall when brushed aside—and for some reason takes delight in hearing them fall (25). At about one year of age there begins to appear activities of types more commonly spoken of as play, such as manipulation of blocks. By 3 years of age the nursery school youngster dabs paint on large sheets of paper to make blobby "pictures," hammers at a nail in a piece of board, climbs in the jungle gym, and may earnestly enjoy riding nowhere, round and round, on a tricycle.

Elementary or secondary school youngsters, however, rather than nursery school babies are probably the concern of most readers of this volume. What are the outstandingly important features in the development of play through the school years? Table 13 should be of service here; it is from an extensive study of play based on 26,056 reports of play activities, from children in the primary grades to students at a state university. The little tots below the third grade were each asked individually to mention what he or she liked best to do; from the third grade on the pupils checked the three activities they most liked, on a carefully prepared list of 200 play activities (39). The table shows, in order of frequency of mention, the ten activities most often preferred by each sex at ages 5, 10, 15, and 20.

Some of the activities, like reading the newspaper, might not be thought of as play; but a merit of the inquiry is that it was broad and included a great variety of leisure-time activities. The data were gathered mostly in Kansas in 1923–1926; doubtless a similar inquiry now would show the girls listening to the radio more and playing the piano less, and if made in New York or California it might include swimming rather than hunting. Differences from one locality and time to another will be returned to later. But in general the lists remain valuable evidence of the trend of leisure-time interests through the first 20 years.

As already mentioned, 5-year-olds like to play with blocks. They also like to imitate adults in simple ways such as playing house,[1] and to play simple games like tag. Much of the 5-year-old's play is such that he can play by himself. By the age of 10, boys prefer play recrea-

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[1] As a matter of fact, this interest of young children in adult activities was even more important than is shown by the table. The investigators mention the frequency with which young children spoke of liking to "help mama" do this or that, or "put coal in the furnace if allowed." Because of difficulties in classifying such reports, they were not included in the table.

TABLE 13.—The Ten Most Popular Play Activities at Ages 5, 10, 15, 20[2]

Boys	Girls
5 Years	
Playing with a ball	Playing house
Playing with blocks	Playing with dolls
Playing with a wagon	Playing with a ball
Playing house	Playing school
Playing horse	Drawing
Hide-and-seek	Mulberry bush
Playing tag	Playing with blocks
Drawing	Skipping
Playing school	Making things
Playing in a sand pile	Jumping rope
10 Years	
Football	Playing the piano
Baseball	Going to the movies
Boxing	Looking at the "funny" paper
Just playing catch	Playing with dolls
Riding a bicycle	Roller skating
Basketball	Riding in an automobile
Wrestling	Reading books
Playing cowboy	Playing school
Roller skating	Jacks
Marbles	Listening to the victrola
15 Years	
Basketball	Reading books
Football	Going to the movies
Baseball	Social dancing
Driving an automobile	Playing the piano
Tennis	Riding in an automobile
Watching athletic sports	Having dates
Hunting	Watching athletic sports
Going to the movies	Going to parties, picnics
Boxing	Basketball
Reading books	Doing gymnasium work
20 Years	
Having "dates"	Social dancing
Watching athletic sports	Playing the piano
Football	Having "dates"
Basketball	Going to entertainments, etc.
Listening to the radio	Just "hiking" or strolling
Going to the movies	Going to the movies
Driving an automobile	Reading books
Reading the newspaper	Watching athletic sports
Tennis	Card games
Baseball	Riding in an automobile

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[2] Modified from (39).

tions like playing football, riding a bicycle, or playing cowboy. At 15 active team games continue to head the list, but passive amusements such as watching athletic events, going to the movies, and reading books appear among the ten most popular recreations. By 20 the sex-social interests of having dates and watching sports hold first and second places—and much of the interest in such sports as football is of the watcher rather than participator type.[8] Five-year-old girls play in much the same simple fashion as boys of the same age. In middle childhood and adolescence they differ from the boys in the less active and less competitive nature of their play activities and the earlier appearance and greater prominence of sex-social interests (a fact which might well be related to earlier physical maturing in the girls). By 20 these sex-social interests are outstanding.

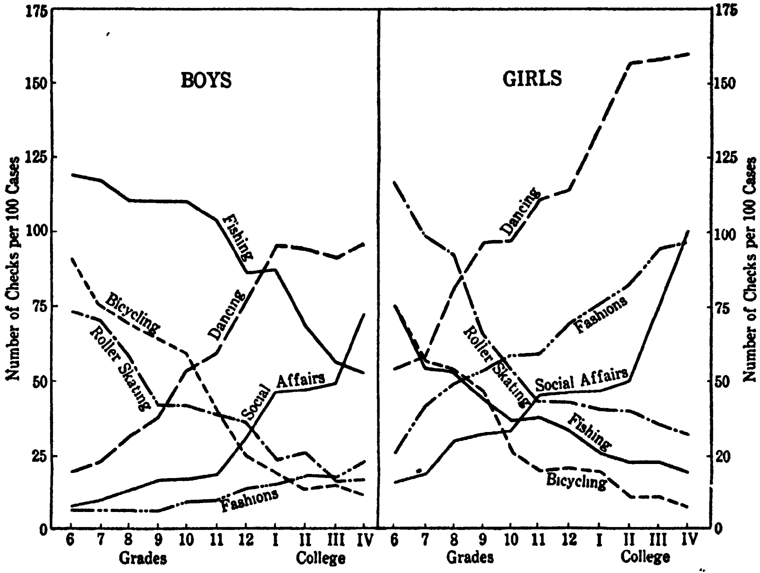

CHART 23.—Changes in certain interests with age as shown by number of checks for each interest per 100 students at each grade from the sixth through college. The students were directed to check those items in which they were interested, and to double check those in which they were very much interested. (From unpublished data, 4187 cases, obtained with the Pressey Interest-Attitude Tests.)

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[8] This is clearly shown by the data in this same study on the frequency with which various activities are engaged in at different ages. At 15, football is seventh in rank in the frequency with which it is played, but by 20 it has dropped to twenty-eighth position.

If all these data regarding play over the first 20 years are reviewed, two phases of its development seem to emerge: (1) Over the years of rapid physical growth (roughly from babyhood through 15 to 18) there is a parallel growth in the vigor and the complexity or mental level of play. (2) With adolescence and the slowing down of the vigorous onrush of growth, sex-social interests tend to dominate leisure-time activities, and participation in very active sports is less general.

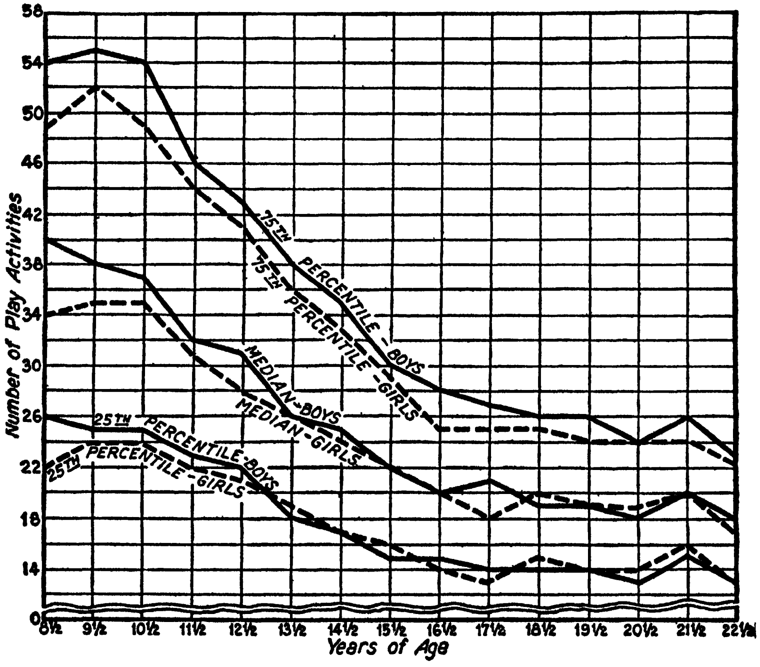

CHART 24.—Change with age in the number of different play activities engaged in. (From Lehman and Witty [39].)

The decrease of interest in active and relatively simple sports and its increase in social affairs which involve companionship with the other sex, also the earlier and more marked appearance of this last type of interest in the girls, are shown in the Chart 23. Students from the sixth grade through college were asked to go over a list of 90 amusements and recreations, checking those in which they were interested and double-checking those which interested them very much. The curves show total number of checks per 100 students, thus combining in one "score" the number of individuals interested and the degree of their interest. Whenever the score goes above

100 it is clear that some were very interested (double-checked) in that item.[4]

The extensive investigation of play first referred to in this chapter showed that the number of different play activities which each youngster checked as those "in which he had engaged on his own volition during the week preceding" dropped from a median of about 40 for the 8-year-olds to 18 by the age of 20. As shown in Chart 24, the change was gradual. The great differences among the younger children are also to be noted; thus the 25–75 percentile range is 28 at 8 years as compared with 11 at 20. Apparently children 8 or 9 years old engage in a variety of relatively simple activities. Gradually some games and amusements are dropped, some centered upon, until by his last years in high school the average individual's leisure activities have been largely conventionalized to a relatively few generally popular (almost socially necessary) habits of recreation. These recreations are also conventional topics of conversation and become part of the American way of life; baseball and golf and bridge and movie-going are part of American culture.

Though usually not a matter of consideration, teachers should be concerned as to the leisure-time activities of out-of-school youth. These activities are a further development of the trends so far presented. And they exhibit problems which the schools should face. The data in Table 14 are from an investigation in which over 13,000 Maryland young people between the ages of 16 and 24 were individually interviewed, asked questions, and given an opportunity to express themselves.

The paucity of interests of those with sixth-grade education or less—largest portion of the time spent in loafing—is the most striking item. Presumably with the low educational status there tends to be associated low intellectual ability, low socio-economic status, and low family morale. But surely the situation shown in the table need not be thought of as inevitable. Sample replies may make the situation more concretely real. An 18-year-old farm laborer said his spare time was spent "piddling around, visiting, and reading." Another boy said, "I play cards, loaf, eat, and sleep"; another, "I sit in the barber shop." A 22-year-old unemployed boy of ninth-grade education spent his time "reading and sitting around home and listening to the radio. I try to be as little expense as I can to my mother" (1, p. 166). Apparently the development of leisure-time activities and interests, which went on more or less satisfactorily through the school years, is for many blocked off after leaving school. Especially do sex-social opportunities appear to be lacking.

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[4] The data were gathered in 1931–1932; since then bicycling has become more popular. Fads and fashions in recreation will be returned to shortly. The general trends of the findings are believed to be of general significance.

TABLE 14.—Principal Leisure-time Activities of Out-of-school Youth According to the School Grades They Completed [5]

	6th Grade or Less	9th 10th 11th	4 or More Years Beyond High School Grad.
Loafing	22%	8%	4%
Dancing, dating	13	16	8
Individual sports	12	16	18
Reading	11	23	43
Team games	10	9	4
Movies	9	13	8
Hobbies	9	8	10
Other activities	9	4	2
Listening to radio	3	2	1
Quiet games	2	1	2
Total	100	100	100
Number of youth	1483	2569	396

Aptitudes, Abilities, and Play.—By now it should be clear that the development of play is affected by various factors. A natural first question is as to the relation of intelligence to play. It is often supposed that bright children tend to play much less than "normal" youngsters. Research does not show this to be true. Children who are ahead of the average grade for their age do not as a group show either fewer play activities or more solitary play; in short, a moderate acceleration of healthy bright children in school seems to do no harm to their play life.[6] Exceptionally intelligent children read more and, apparently largely as a result of this fact, engage somewhat less frequently than average children in social and very active games, but they enter into about the same total number of play activities. Duller children and children behind in school grade read less and engage more in social and active games (39). All this is very understandable. They are

[5] Adapted from (1), p. 166.

[6] A marked acceleration which puts a bright child far ahead into a class where the children are bigger and stronger than he and socially more mature (as when a preadolescent boy is put in among adolescents) is of course another and most unfortunate matter.

poor readers, and finding little success in school they turn to activities where they can to a greater degree "make good."

Special aptitude as in music naturally will affect the direction of play activities; almost inevitably special aptitude in athletics will do so. Very important but little studied is the effect of special handicaps on recreation. The boy who cannot see a ball well enough to hit or catch it will play little baseball; glasses are something of a nuisance in rough-and-tumble games. The play of children lacking in health or vigor will be less vigorous. Recreational programs should be adapted to such youngsters much more than they usually are.

The Influence of Environment on Play.—The effect of different types of environment on play is a matter of great practical and also great theoretical importance. Certain contrasts between town and country children shown by the Lehman and Witty investigation are of interest here. In general, country children play games of a less highly organized and team character, presumably partly because there are fewer children in a given age group to make up a team and less opportunity for different groups to compete, and partly because in a play group of mixed ages the games have to be simple enough for the younger children to play. Thus, 41 per cent of the rural children between the ages of 10 and 15 played "Blackman," as compared with 7 per cent of the town children; 35 per cent played "Teeter-totter," as compared with 10 per cent of the city children. Country boys naturally hunt more than city boys; country children of both sexes indulge more in mildly boisterous behavior such as whistling and singing, they more often climb things, they ride horseback more but bicycle less. An average of 40 per cent fewer of the country children between the ages of 8 and 15 went to the movies in a week than did city children; the distance of the country children from the movies is the obvious major explanation. In view of the manifold influence of the movies (to be discussed shortly) in giving vicarious compensatory experience and in modifying attitudes, ideals, and standards of living, such differences are of decided importance.

Other factors of physical environment or circumstance are important. Thus if streams or lakes are nearby, swimming, canoeing, fishing, skating, and building rafts and making precarious journeys thereon are likely to be common activities, but otherwise they are hardly possible. The exhilaration of skating and skiing, the thrill of bobsledding, and the sociability of the sleigh ride are obviously not possible in a southern climate. The lack of such winter sports would seem, to anyone who has grown up in the enjoyment of them, to make the total character of child life in the South a bit different from childhood in a northern state. Other factors are more special. Play, both at school and at home, is varied according to the nature of the play space and according as various facilities such as sandpile or baseball diamond are available. It should be noted that these facilities have multiple effects. For example, it has been observed that, with younger children, the sandpile or the seesaw tends much more to bring children together sociably in their play than do dolls or a blackboard.

Fads, Fashions, and Conventions in Play.—Play thus varies with the physical and intellectual development of the child, and with physical environment. A third important influence is social. Here it must first be noted that there are fashions and fads among children as well as in the adult world, and also that games and other play activities may be handed down from one child generation to another;[7] in short, that in their play children are greatly influenced by one another.

> In the boyhood of one of the writers it was the fashion (he has not found it in any other community) for boys in middle childhood to build what were known as lath tracks on which a peculiar form of railroad was played. It was also the fashion to build "cubbies," which were simply holes in the ground roofed over with planks covered with dirt, with a fireplace in a corner, the use of which made the hole almost uninhabitable. Sometimes a vigorous child leader has an important effect on play, carrying a group to dramatic Indian raids or the construction of a nondescript "club house."

Fads and conventions may operate either to extend or to limit the variety of play. Thus Lehman and Witty found that in certain schools many of the younger girls enjoyed turning handsprings; this activity was traced to the influence of a private class for aesthetic dancing which some of the girls had been attending. A study of children in summer camps showed that upon arrival they checked baseball and other conventional pastimes on the camp "interest-finder," but after they had been in camp a while many of them became greatly interested in handicrafts. Children old enough to regard sand play as "baby stuff" became interested in it when a camp counselor showed them possibilities which challenged them.

Certain larger cultural influences upon play also deserve mention.

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[7] This continuity of child life is a fascinating and important thing; it is also illustrated by the way in which certain vulgar words are kept current among children in spite of adult disapproval.

The organized team game seems to be largely an Anglo-Saxon product. American collegians prefer football, whereas the youthful intelligentsia in Germany before the war had a special fondness for dueling and the French preferred tennis to play between groups. But all this was presumably not because German or French youths lacked some mysterious instinct or ability which tended to make English and American boys peculiarly fond of team games. Rather the explanation was to be found in differences in climate, in the size and character of the leisure class, and especially in the largely unknown development of the conventions of amusement. It must be further observed that these differences are being rapidly modified. American baseball has no very long history, and its amazing popularity in Japan before the war came about in a short period of time. The great interest in golf in the United States is comparatively a recent phenomenon. In short, there is every evidence that the form which the play life of a community or a nation takes is determined by influences which are best described as cultural; certain conventions are developed with respect to sport and amusement.

The writers are inclined to believe that the competitive character of much American play is to be regarded as such a convention. After all, many recreational activities, such as fishing, canoeing, hiking, dancing, and singing, are not competitive. The tendency to identify play with competitive games and sports may be partly a product of our highly individualistic and competitive socio-economic mode of life. It is probably more a result of newspaper publicity for sports, advertising of sporting goods manufacturers and bridge system authors, and exploitation of sports by schools. The present emphasis on the competitive in recreation seems to be relatively recent[8] and, on the whole, unfortunate.

Sex Differences in Play.—The various ways in which environmental influences may work are well illustrated by the development of sex differences in play. Dolls are given to girls but not to boys, and girls are commended for playing with them, whereas boys who do so are made fun of by both adults and other children; parents even go so far as to take dolls away from boys who enjoy such inappropriate amusement. Boys are given carpenter's tools, mechanical toys, footballs, guns, and books about science, war, travel, sport, and adventure. The father enjoys baseball and he takes the boy—but not the girl—to watch games; he plays catch with the boy. For a boy to engage in rough-and-tumble sports is considered only fitting and proper. But girls may be scolded if they indulge in rough tomboy play. However, increasingly in recent years—and with accelerated pace as a result of the war—these influences are changing. New freedom as regards dress and manners, and opportunities for girls in sports, are making girls more active. New occupations for women may affect the play of girls. And it will increasingly be apparent that sex differences in play, except as they are the product of a slightly earlier puberty and a slightly smaller physique and strength among girls, are primarily a product of convention.[9]

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[8] One of the writers has recently been going over copies of *Our Young Folks,* a magazine published in 1867 for young people, and also some diaries of that period. The absence of formalized sport or competitive amusements is striking. A charming story by Harriet Beecher Stowe of an adolescent girl going to the "Academy" describes bobsled rides, and a candy pull from which the young people did not return home "till almost nine o'clock." But a competitive game is never once mentioned.

Play and Adult Life.—Extremely important and much neglected is the extent to which the play of children is an imitation of adult activity. Children play doctor or soldier or policeman; they play store; they are interested in dramatic activities like aviation. Prominent events such as war may greatly influence their play. Local adult life has its immediate effect upon child play, as in the imitation of local industries or episodes. Such play can obviously be made educative. It should be noted that this play usually mimics not only adult activities but also the attitudes, prejudices, and moral code of the adult group concerned.

Finally, both child and adult play are greatly influenced, more or less directly and obviously, by commercial attempts to make a profit out of amusements. Yo-Yo and Chinese checkers have a vogue for a while; kiddie cars, roller skates, and Pandas have become almost standard appurtenances of childhood. The ubiquitous newspaper and radio publicity for sports, moving pictures, and night clubs modifies youth and adult alike.

Because these social determiners of play have been so much neglected but are so important for an understanding of the educational potentialities of play, the reader should make a special effort to make real to himself in recollection of his own experiences the importance of such influences in determining amusement. The analysis of one boyhood showed the following: Fads for stamp collecting and for the catching and imprisonment of grasshoppers in small screen-covered boxes had their vogue. The popularity of the air rifle and of that pestiferous concealed weapon, the rubber-band slingshot, played a large part in boyhood episodes. An international boat race once set every boy to making model boats; the building of a new railroad bridge nearby caused the erection of numerous miniature derricks and bridges. The war set all the boys to soldiering; the reading of Scott's *Ivanhoe* in school led to the brandishing of wooden swords and lances throughout the neighborhood.

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[9] As a matter of fact, some younger boys do play with dolls, and there are plenty of hoydenish girls. Analogous cases in adult life are also interesting. One of the writers knows of a star college halfback whose hobby is embroidering, and a woman whose favorite girlhood amusement was tinkering with machinery and who now owns a garage; the late George Eastman's two favorite amusements were hunting big game in Africa—and cooking. At all ages, marked sex differences in play may soon largely disappear. And it may be added in this connection that sex differences in vigor and physique may then be lessened. Surely the extraordinary activity of the healthy boy must affect his physical development. Healthy girls seem about as active, if they are not restrained in such ways as have been mentioned.

Individual Differences.—The preceding pages have outlined general trends in the growth of interests as shown by play activities, and discussed major factors affecting that growth. But, as always, the reader must keep in mind that individual differences and variations from these general trends are great.

Thus Lehman and Witty (39) found that most games were indulged in by less than half the children of a given age. Differences in the number of games or amusements engaged in were great; for example, some 5 per cent of the children between 8 and 9 years of age reported 10 or less different play activities in a given week, while, at the other extreme, about the same percentage checked more than 80 different kinds of play engaged in by them during the week. Children differ greatly in the extent to which they play with other children. These same investigators found that through the ages from 7 to 19 slightly over half of the average individual's play activities were with other people. But 7 per cent of the 8-year-old children and 10 per cent of the 15-year-olds showed less than a quarter of their play activities to be with other youngsters, as against 26 per cent of 8-year-olds, and 13 per cent of the 15-year-olds who reported three-fourths or more of their play as activities in which other children took part.

In the secondary school, as interests become increasingly sex-social and socio-recreational status claims attention as never before, such individual differences often present difficult problems. Athletics bring some a heady prominence. Recreations are largely competitive and society is sophisticated. Those who "belong" live in a feverish little world of games, dances, dates, and other activities. Though often little noticed, however, the number of students who are outside all this, starved and miserable socially and recreationally, is great. One sample investigation showed 67 per cent of boys and 62 per cent of girls in the freshman year in a high school who never attended dances, and 46 and 40 per cent respectively in the senior year (45).

In college and university the diversity may be even greater. An investigation at the University of Minnesota showed half the freshmen participating in no activity, but 2 per cent participating in four or more activities (11). By the senior year a quarter of the students were still not taking part in any campus activity. At Ohio State University 22 per cent of a large group of seniors reported that they had not during the past year engaged in any sports, 33 per cent had not played any indoor games (such as bridge), 25 per cent belonged to no social organization; of the senior men, 27 per cent had been to no dance and 24 per cent had had no date during the previous month. Here clearly are problems for a constructively guided socio-recreational program.

All such material suggests that data regarding an individual's recreational activities should yield valuable information about him. Especially should such information be indicative as regards his social adjustment. This will be returned to in the next chapter.

RELATIONS OF READING, MOVING PICTURES, AND RADIO TO INTERESTS

So far the chapter has dealt broadly with the various things people do when they do what they want to, as evidence of interests. Stress has been on the more active uses of leisure time. Now attention must be turned to certain topics which have already appeared in the catalogue of uses of leisure but which are passive amusements and are both sufficiently special and sufficiently important to deserve separate treatment.

Such interests can be investigated in various ways. Simplest and therefore most widely used is direct inquiry; pupils are asked to list books they have read, movies seen, or radio programs listened to or most enjoyed, or to check lists of such books or programs, or to tell why they like the books or movies or programs they prefer. Reading preferences may be determined by the use of books in libraries or the circulation of magazines; movie interests, by attendance; radio listening, by telephone inquiry or by an apparatus which records when a family's radio is on. Each one of these methods has its limitations. Pupils tend to report what they think the teacher will like. They read what they find at the neighborhood library, see what is booked at the neighborhood movie, and listen to what the local radio station carries, but they might enjoy other material if it were available. Magazine purchases are determined chiefly by adults. In spite of such difficulties, from the total of all the findings a fairly consistent picture of the nature of interests at various ages emerges.

Here once more the reader will find it interesting to retrospect. In reading, memory will very likely go back to certain charming tales printed in large type and with line drawings, telling of other little children at the mountain or seashore or in friendly games together; there will be a lingering recollection of the satisfaction which was obtained in reading about the good times had by other children and somehow identifying oneself with them. Soon came, for the boy, a fascination in stories of adventure. Perhaps *Tom Sawyer* was read and reread; the *Tarzan* series received their full share of attention. Still wilder tales may have had their surreptitious place, such as Superman or other ten-cent dreadfuls. Perhaps the Henty books took the boyish reader in courageous adventures to the most daring times of history. Or possibly the major interest was in tales of football heroes or triumphs in the ninth inning. With adolescence came a shift to the romantic story and perhaps also to the surreptitious reading of by no means respectable romances. Reminiscence of movie interests will probably show a gradual development from the primary interest in adventure and the comics to more and more sophisticated, as well as romantic, presentations.

Reading Interests.—First of all, what types of books do children prefer at different ages? Children just beginning to read (about 6 or 7 years old) show special delight in short, profusely illustrated, rather fanciful stories about animals or fairies or other children. Gradually there is a certain emergence from fancy to fact, and for three or four years, beginning with 9 or 10, the boys are interested in tales of active adventure, in invention and mechanics, in the lives of famous men, and in material about hobbies. A typical study (33) showed that 32 per cent of the books dealt with war and scouting (such as Altsheler's *On the Plains with Custer*), 29 per cent with school and sport after the fashion of Barbour's *The Half Back*, 16 per cent with Boy Scouts, and 23 per cent with strenuous adventure as in Mark Twain's *Tom Sawyer*. Around 12 or 13 there may be a "reading craze" when the boy reads more books than ever before or after. Entire series, such as the Tarzan books, may be devoured. Meanwhile the girls read stories of home and school life, and show some interest in boys' stories of adventure. A typical study of the books read by girls 10½ to 13½ showed that 37 per cent were studies of home life such as *Little*

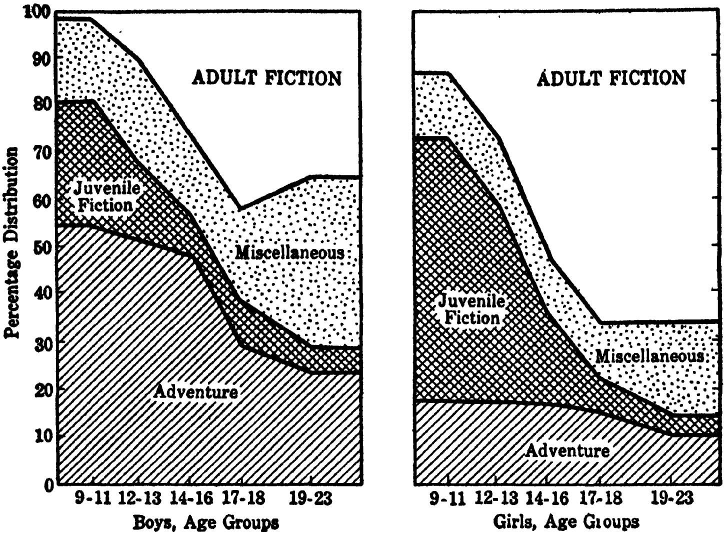

Chart 25.—Percentage distribution of best-liked books classified according to type, by age groups and sex. (From Shuttleworth [47], Fig. 308. Based on Jordan's data.)

Table 15.—The Five Magazines Most Often Mentioned as Read Regularly by 2500 Pupils in 21 Communities, March, 1937 [10]

Magazine	Grade 8		Grade 10		Grade 12	
	B	G	B	G	B	G
Popular Mechanics	1		5			
Boys' Life	2					
Western stories	3	5	1			
Detective magazines	4		2		2	
American Boy	5					
Movie magazines		1		1		1
American Girl		3				
True Story		4		2		2
The Saturday Evening Post			3		1	
Liberty			4		3	
The American Magazine					4	
Literary Digest		2		3	5	
Ladies' Home Journal				4		3
True Confessions				5		4
Good Housekeeping						5

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[10] From (8), p. 344.

Women, 15 per cent stories of school life like *Peggy,* 6 per cent fairy stories such as *Alice's Adventures in Wonderland,* 7 per cent love stories; another 6 per cent had a historical background, and 29 per cent were miscellaneous. Relatively early, girls become addicted to romances and love stories and sentimental trash (a level which many of them seem never to leave); and by the middle teens they are reading adult fiction. Chart 25 summarizes the situation.

However, books are not the most universal form of reading matter; first come newspapers and then magazines. Thus in a mid-western city 89 per cent of the pupils in Grades 5 to 11 reported having read one or more books during the previous month, but 98 per cent had read magazines and 99 per cent newspapers.[11] Analysis of magazine reading shows much the same trends. A survey as to magazines read regularly yielded results shown in Table 15. Most often read by eighth-grade boys is the mechanics-hobby magazine; there is a shift to western adventure in the tenth grade and to the miscellany of *The Saturday Evening Post*[12] in the twelfth. First with the girls at all three ages are the movie magazines, with *True Story* second in the last two groups.

Interest in various sections of the newspaper is summarized in Chart 26. For both sexes and all ages the most frequently looked-at section is the comics. Next comes the miscellaneous headline news of the front page. Interest in the children's page and in puzzles drops with age. Distinctively prominent is the sports page for the boys and the society page for the girls.

That there are great individual differences in reading interests and amount of reading done need hardly be said. A hobby may lead to avid reading along some special line. A high school survey showed that one boy read 23 different magazines regularly, while many other youngsters read none. Gifted children read two or three times as much as the average child, and their reading is more likely to be informational. The nature and amount of a child's reading will almost always be greatly affected by the amount and variety of reading matter available to him—and not only families but neighborhoods and communities vary enormously in this respect. Thus the circulation of twenty leading magazines per 1000 population varied from 488 in Nevada to 105 in Mississippi (48). In Maryland, over half the rural white young people reported no public library available to them (1).

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[11] This study included excellent data on adult reading, gathered by personal interviews. Only 27 per cent of adults had read a book during the month, whereas 82 per cent had read magazines and practically all had seen a newspaper (32).

[12] The investigator states that the prominence of the *Post* and the *Literary Digest* may be due to emphasis in school on current events and large home circulation rather than outstanding pupil interest.

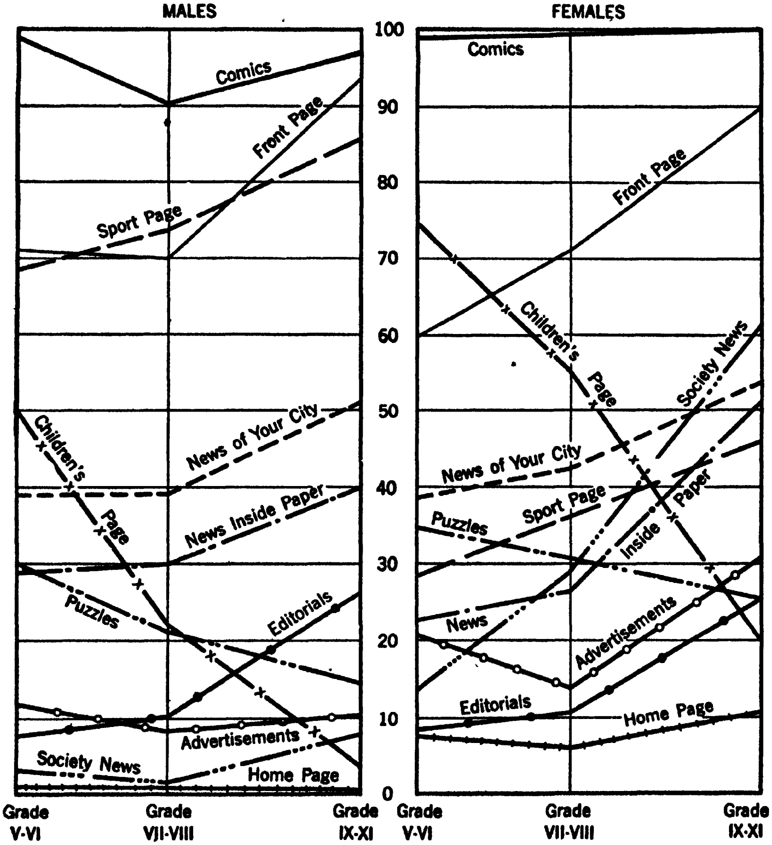

CHART 26.—Percentages of Duluth children of different ages (in succeeding school grades from 5 through 11) who in 1929 usually read various sections of newspapers. (Adapted from Johnson [32].)

Dramatic were the results of comparison of a "good" and "poor" area in Chicago. In the good area there was a sprinkling of professional people, business men, clerks, and a large number of laborers; delinquency rates were low; English was the dominant language in 97 per cent of the homes. In general appearance the district was prosperous. The poor area appeared shabby; population density was twice that of the good area; a large proportion were foreign born, and only about half the families used English as the dominant language. Most were Catholic. Educational level was low; delinquency rates were high. Now as to the reading in these districts. People in the good district were found to be reading 2.68 times as many magazines, 2.06 as many books, and 1.58 times as many newspapers as people in the poor district. Further, the better area read about five times as many reputable books (in terms of approved book lists or the investigator's judgment) and about sixteen times as many of the better type of magazines, but the poor area read about twice as many pulp magazines.

Evidently both the quantity and still more the quality of the individual's reading depend not only on age and sex but also on the total social-cultural milieu in which he develops and lives.[18] This is true of all interests.

The findings regarding reading interests are thus essentially similar to the data regarding play. First there is interest in simple little stories of childhood and home. In later childhood boys are interested in mechanics and adventure, girls in fiction stories of home and school life such as *Little Women*. First girls and later boys become predominantly interested in adult romantic fiction. But the nature of an individual's reading may have a significance beyond what his play activities show. That is, his reading may indicate not only what he likes to do, but what he would like to do and cannot. The slight sickly boy may revel in stories of football heroes and thus obtain vicariously certain feelings of accomplishment and prestige which in real life are most conspicuously impossible to him. Success stories may bring brief specious thrills to commonplace uninspired folk who in reality can anticipate nothing but drab mediocrity or failure. The poor and homely and unsought-after girl may in "the pulps" find social and romantic satisfactions which in real life are conspicuously absent. Reading choices thus not only show the direction of an individual's major interests; they may also indicate something as to which of those interests are most lacking of realization.

More generally, happenings and characters in preferred fiction show what the reader would like to do and be. The characteristics of the heroes and heroines in the stories most enjoyed by readers at different ages are therefore of distinct significance. Boyhood admiration is for strength, skill, courage, self-control; the hero comes through sundry crises to success and general recognition. Gradually in adolescence the romantic element is added to these characteristics, the hero being the strong handsome individual who wins the charming girl. The younger girl's heroines obtain the esteem of worth-while friends; this esteem usually involves an element of social position. Opportunities are described for the wearing of fine clothes and for pleasant social gatherings. There is the display of certain admirable social characteristics such as friendliness. The heroine of the adolescent girl may still show such traits, but others become more prominent. She is attractive—if not beautiful, it is at least finally evident that she has sex appeal. She suffers bravely certain vicissitudes of love, and ultimately she is wooed by a most desirable young man. Usually either hero or heroine has wealth and social position, or prosperity is at least glimpsed around the corner.

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[18] It would be pleasant to be able to say that school programs in literature were an important influence upon the reading interests of young people. But unfortunately such programs seem usually out of touch with the young people they might serve. Significant here is an article reporting that the average date of publication of material college students read of their own choice in 1934 was 1934, but the average date of first publication of books used in literature courses was 1673 (52).

Reading may also stimulate interests, may shape and direct them. For example, one teen-age boy read everything he could about a much-publicized criminal and determined to emulate him; another reentered high school and went on to a scientific course in college as a result of reading a biography of Pasteur. Such episodes are of course exceptional. Presumably millions of boys have played Indian or cowboy as a result of reading stories about such persons. Probably as many young people have been thus stimulated to unwise vocational ambitions, extravagant leisure-time interests, sentimentalized and irresponsible impulses and ideas as regards the other sex. But all this is only inference; strangely enough, there has been practically no research on the effects of reading. For research regarding the effects of such ready-made imagining and thinking it is necessary to turn to the moving picture and the radio.

Interests and Moving Pictures.—Certainly the movies are a major interest; attendance in childhood and youth is almost universal, with about 70 per cent of youngsters between 8 and 18 going at least once a week and about 25 per cent going twice a week or more, and almost a fifth of them seeing the feature through twice (14). What types of movies are preferred? Table 16 summarizes data which are representative. As with reading, the chief interest in middle and later childhood is in active, swashbuckling tales. Comedy is also liked. The loss of interest in "Westerns" from grade to high school on the part of both boys and girls, and the girls' increased interest in romance, are the most marked changes with age. The lesser interest in adventure and greater interest in romance are the most marked characteristics of the girls as compared with the boys.

TABLE 16.—Percentages of Grade and High School Boys and Girls Who Selected as Their First Choice Certain Types of Movie, with Increases of High School over Grades and Sex Differences at Each Level [14]

	Boys			Girls			Differences Girls over Boys	
	Grade	High	Gain	Grade	High	Gain	Grade	High
Western	34	7	−27	20	6	−14	−14	−1
Adventure	14	14	0	7	6	− 1	− 7	−8
Comedy	11	13	2	16	10	− 6	5	−3
Historical	2	13	11	5	11	6	3	−2
Sports	5	12	7	4	8	4	− 1	−4
Mystery	6	9	3	7	9	2	1	0
Romance	5	7	2	13	23	10	8	16
Tragedy	2	6	4	8	10	2	6	4
War	5	4	− 1	2	2	0	− 3	−2
Educational	1	3	2	1	2	1	0	−1
No. of cases	702	1153		765	2180			

The development is from the melodrama (in which the characters are readily classifiable as either good or bad, the plot is stereotyped, conversation unimportant, and action everything) to the romantic story that unfolds usually against a background of wealth (with characters and plot nearly as stereotyped as before and conversation concerned mainly with lovemaking) toward the adult story of conversation and characterization. In childhood boys prefer actors and girls actresses. In adolescence the girls shift over to devotion to the current "great lover" of the screen and the boys shift less strikingly to interest in women stars. Interest in the movies, as in reading and daydreaming, gives vicarious desired experience. By identifying themselves with the hero or heroine the audience tend to feel the satisfaction of being such a splendid person, having such exciting experiences, and receiving the attention of such delightful individuals as the identified-with character meets on the screen.

Analysis of the content of sample motion pictures shows something further as to what interests people—or what the realistic movie industry thinks interests them, and in any case what the public gets. Analysis of 500 feature pictures shown in 1930 indicated that 7 out of 10 dealt with love, crime, or sex (15). Of 115 pictures selected at random in 1932, 45 included killings and 21 had attempted killings. In 78 per cent there were liquor situations and in 43 per cent intoxication. Another analysis of 142 pictures showed 741 scenes of kissing and caressing, 522 of treatment of children by parents, 313 of treatment of employees and subordinates. In scenes of the last two types, it was found that children, employees, "inferior" races, and persons of "inferior" social standing tended to be treated better in the movies than in the real world. In the movies girls are more aggressive in lovemaking than is generally approved in real life. If a major appeal of moving pictures is the fact that vicarious satisfactions are thus obtained for desires not adequately met in real life, here is evidence as to what those unsatisfied desires are: hunger of children and humble folk for status, sex hunger, and hunger for activity, variety, excitement, and letting oneself go.

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[14] Adapted from (44), pp. 111, 113.

Now as to the research, referred to above, of the effects of movies on children. Records of pulse, breathing, and electrical changes in the body were obtained from certain children while they watched various types of movies. Melodramatic scenes were found strongly to excite 9-year-old children, but older persons sensed the unreality of these episodes and were little affected. Erotic scenes stirred a few children as early as 9 years, had greatest effect (in heightened and irregular pulse and breathing) around 16–18, stimulated yet older persons less, probably because of "adult discount" (18). A device under children's beds which recorded every movement showed that youngsters frequently were more restless in sleep after seeing a moving picture (as restless as two cups of coffee made them) (46).

Movies thus have demonstrable effects on the child's physical being. Other effects are also important. Movies even more than reading have an effect on play. Roles of hero and heroine are widely imitated in games. In most cases the victorious character assumed by the child in the play situation is a "good" character and the criminal is vanquished. Children seem largely to imitate those situations in the movies that fit in with interests already somewhat established; the imitation is not of any or every scene but is highly selective in character.

The lively 10-year-old boy already fond of frontier stories starts a cowboy and Indian game imitating an episode in a "Western" film—much as his father did the same thing after reading a dime novel. A boy already started toward a delinquent career may get further stimulus toward crime from a movie, but the average youngster will hardly be so affected. Thus a a young burglar told how "when we came out of the show a couple of the boys suggested that we try to rob a store, the way we had seen in the picture. . . . We bought a crowbar and screw driver and went to a clothing store and sprung the lock" (4, pp. 19, 51).

Far more important for the average youngster are the suggestions he or she receives for furtherance of social interests. Thus one girl "kept my hair just like" an admired actress, "plucked my eyebrows in her way," imitated ways of holding her hands and of glancing down. Other girls reported that from the movies they had learned "what to do when in a crowd," . . . "how to act with boys . . . to make love, to smoke, and to wear swell clothes." Desires are stirred: "When I see movies that show snappy clothes and wealth I want these things also"; "passionate love pictures . . . make me want to be loved." (4, p. 85 ff.)[15] That along such lines the movies do have influence there seems little doubt. They conventionalize interests and standards as to their satisfaction, and do so at levels of luxury and self-indulgence which are highly undesirable.

The Radio.—There are radios in over 90 per cent of American homes; data indicate that in the average city home the radio is on over three hours a day.[16] The average child goes to the movies about once a week for about two hours, but he listens to the radio every day; his listening time for a week totals several times longer than his time in the moving picture theater. Further, the radio is an extraordinarily subtle and pervasive influence. It literally enters the home and becomes part of the life there. Favorite programs may be regularly turned to, as part of the accepted routine of the family existence together. Much of the time the radio is a background accompaniment of study, entertaining, or housework. On occasion famous men speak, right there in the living room, to the family, and events in the world of sports or politics or war are recounted as they are in the making. In total the radio is the most extraordinary instrument for entertainment, education, and propaganda ever devised. Data regarding radio listening and radio programs should be of significance to every teacher.

As with reading and movies, the programs may be thought of as both interest-indicating and interest-forming. Certain reports indicate that two-

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[15] The books by Blumer contain illuminating firsthand reports, from school youngsters and reformatory inmates, of incidents and actions illustrating the effects of the movies on them.

[16] This total of course need not mean that any one person listens all this time. One careful investigator has found New York City children in Grades 6 to 8 to average about 6¼ hours per week. These children stated that they would rather listen to the radio than read an adventure story or book. They did, however, prefer a movie or reading the "funnies" to listening (21).

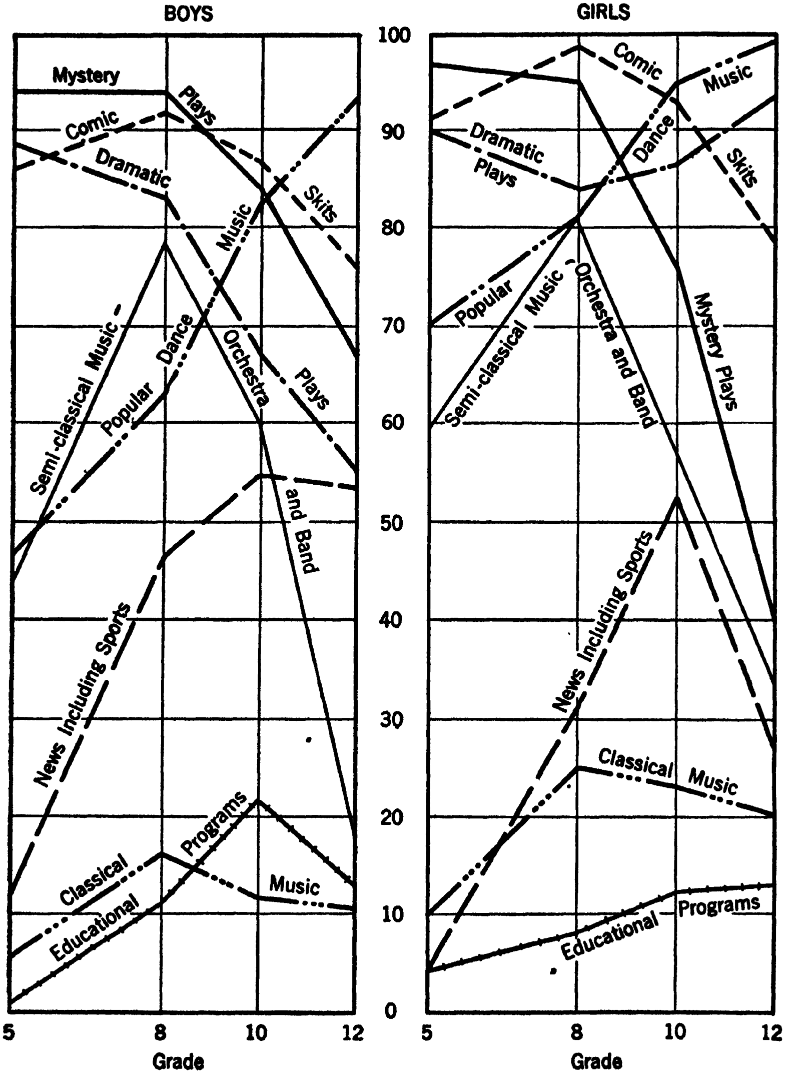

CHART 27.—Percentage of 2500 boys and girls in Grades 5, 8, 10, and 12 who checked different types of radio programs as types to which they enjoyed listening. (Adapted from data in Brown [8], p. 328.)

thirds of the younger listeners tune in blindly, about 5 per cent of all listeners tune in regularly to only one station, and three-fourths restrict their listening to three stations. However, even the most indiscriminate tuners-in have preferences. Program-makers check upon and adjust to these preferences. All the time these preferences are responding to fad and fashion and perhaps somewhat to education; they are also developing all the time along the directions set by the essential characteristics of human nature.

Chart 27 is a sample of findings regarding sex and age differences in radio preferences. The major trends are similar to those already seen in movies, reading, and play. Grade school children most enjoy dramatic action and humor. By the senior year these programs are much less popular, and popular dance music has shot up to first place. From grade to high school there is a marked increase of interest in news and sports, but by the senior year these programs attract less, especially the girls. Semi-classical music for orchestra and band appeals to eighth-graders but then drops off strikingly. Classical music and educational programs have little vogue at any age for either sex.

Obviously a program may be liked—or disliked—for various reasons. The New York City eighth-grade children above referred to mentioned "comical and funny" most often (25 per cent) as a reason for liking a program; next most often mentioned (16 per cent) was that a program had music and singing, next (14 per cent) that it was exciting and thrilling. Most common reason for disliking a program was that it was "silly" (26 per cent). Says one of these pre-adolescents, "There is one kind of program that I dislike and that is a love story. . . . My sister likes to listen to them. I think these programs very silly." But the term is of broad connotation. A girl writes that she doesn't like the Skippy program because "he talks very silly for a boy of his age." It must be remembered that back of any individual's interests are very complex circumstances determining what *he* will like. Wrote one boy, "I like comedy programs because after my mother scolds me for doing something wrong I go upstairs, turn on the radio, and end my worries" (quoted in [21], p. 88 ff.).

Evidence has been mentioned that movies may measurably stir a child's pulse or disturb his sleep. The radio also produces physiological changes (17). Of the New York children referred to above, 27 per cent reported lying awake in bed thinking about what they have heard over the radio, and 36 per cent said that they sometimes dreamed about what they had heard.[17] The majority of these dreams were unpleasant or frightening, though a quarter concerned more or less pleasant things. Statements made by the children about other results should not be overlooked. Forty per cent thought they had got help for their history from the radio; 44 per cent thought the radio had led them to be good, honest, and obedient. Songs, games, stories, jokes are learned from the radio, say 15 per cent of the children; 20 per cent learned to eat good foods, 18 per cent to drink Ovaltine! To the question, "Do you think listening to the radio makes one do bad things?" 11 per cent answered yes. Of all wrong acts mentioned, stealing comes first, then disobedience and mischievousness. Catch phrases are learned, like Red Skelton's "I dood it." Nineteen per cent of the children had joined a radio club, 13 per cent had entered one or more radio contests, 16 per cent had visited a broadcasting station, 21 per cent had written a letter to some radio star, 11 per cent had had their names broadcast. Clearly the radio plays a considerable part in the lives of most children.

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[17] Declared one junior high school youngster, "The *Witch's Tales* is on at a pretty late hour when everything is still and sometimes I think a witch could walk right

The Escape of Interests from Reality.—In reading, movies, and radio, an individual's interests may thus escape his limitations of circumstance and ability and take flight in whatever direction fancy may choose. The directions which interests naturally take should be shown with special clearness. Features of human nature might appear which in the real world have little opportunity to show themselves. What features do stand out?

In association with age, the same characteristics and changes are seen as have already been noted. Young children are involved in the task of making acquaintance with their immediate world of home and neighborhood, and the things, people, and animals to be found there; their interest in reading and radio is in such things. Coordinate with upsurging physical and mental growth in later childhood is a restless interest in adventure and travel and invention; pre-adolescent youngsters delight in movie and radio serial thrillers whose outstanding characteristics are action, excitement, variety, novelty. With puberty romantic interest in the other sex appears and soon dominates the situation; the fiction which appeals to the adolescent is almost completely sex-social. Boys are more interested in adventure and novelty,

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into the room, grab me, then take me to an underground den. . . . After the *Witch's Tales*, which ends about ten-thirty P.M., I try to fall asleep. If I do, I dream of ghosts, goblins, and witches" (quoted in [21], p. 109). But many children, it should be added, early develop a certain sophistication. Said one, regarding the plight of the hero in a serial, "Of course the shark won't get him, because he has to be back for the broadcast tomorrow" (quoted in [30], p. 450).

and girls more in stories of pleasant social happenings, with sex-social interests appearing earlier and showing more strongly. These are the same basic trends which appeared in play. They are clearly a part of the processes of growth which were outlined in the chapter on physical growth.

But in these worlds created by the imagination, those desires which are most feverishly strong *and* most unsatisfied show themselves more clearly than in the real world. The school will do well to pay attention to them. Healthy boys should have games and trips, and shops in which to tinker and make things; because the old-fashioned school did not provide such opportunities, vigorous boys left or became "disciplinary" problems. Slowly, modern schools are learning to provide such experiences. Healthy adolescents have as their chief concern acquaintance with the other sex. Slowly, secondary schools are learning that one of their two or three outstanding tasks is the healthy guidance and furthering of such acquaintance. Throughout it is evident that achievement of status—of regard and respect from one's fellows—is *the* major underlying human craving. Much of the next chapter will be concerned with this problem.

It is also evident that these pseudo-worlds of the heart's desires stir and stimulate interests, often in heady fashion. They fix the direction in which satisfaction will be sought, and suggest how it may be found. Within wide limits they set the expectation and the standard as to what will satisfy, in social and economic status, vocation, and mate. For the most part they do these things in irresponsible, impractical, unrealistic, socially undesirable fashion. But these influences—of reading, radio, and moving picture—in total are tremendously influential. If only the schools were even a quarter as effective in thus molding interests and setting goals!

CONVERSATIONS; AMBITIONS

Interest may be shown not only by what people like to do or what they like to see or hear or read, but also by what they talk about or want to be. Brief inquiry regarding these matters should be of significance with reference to the topic in hand—and of more special value to the teacher, as in considering topics in oral English or issues in vocational guidance.

Conversational Interests.—Conversations should contain just about the best possible evidence as to what people are thinking about—and what they want others to think. They should be simple to investigate —all one need do is eavesdrop on people and keep a record of what they say. Yet there has been little research on conversation, and astoundingly little systematic inquiry as to what children talk about among themselves. What data there are were mostly gathered at school, and possibly affected as to topic by that circumstance. The findings are nevertheless worth brief mention. A study of children's chatter at recess as recorded by teachers in 24 schools in 7 states showed youngsters in Grades 3 to 6 talking about games and sports, personal experiences, trips, family and friends, accidents, school, and parties. That is, in general these younger children talked about doings rather than persons or ideas. The older children tended to focus their conversations on fewer topics than did the younger children, and to ramble less (16).

Stenographic reports of daily free-conversation periods in the schoolroom yielded largely similar findings. Less spontaneity might be expected; however, the children were accustomed to these "free" periods. It was found that 27 per cent of their conversation related to home play, 14 per cent to animals, the same amount to school, 13 per cent to auto trips (56).[18]

Studies of the conversations of secondary school pupils seem unfortunately lacking. However, a study at the college level may interest college student readers and also indicate something as to the probable trend of conversations as youngsters grow into adolescence, as well as the factors influencing these trends. Reports were obtained from certain college students of the conversations which took place in certain fraternity and sorority houses and women's dormitories. Table 17 is a summary of the results.

The table shows sex-social interests and campus affairs clearly heading the list. In short, the results are in harmony with the gross trends already indicated earlier in the chapter. Ideas (culture, morals) now appear as topics of some frequency. But there is a further feature of these data which is of decided significance. Differences between "organized" men and "organized" women are less than differences between sorority and dormitory women. And the more talk in the dormitories about sex and recreational interests appears due not to greater experience in these respects but to less; it apparently is a deprivation phenomenon. The influence of what might be called socio-cultural circumstance is dominant.

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[18] Possibly of some interest in this connection are the results of an analysis of some 3000 actual letters written by children in Grades 4 to 6. The following topics predominated: (1) "activities and experiences of life," (2) objects, (3) school, (4) animals, and (5) weather. J. A. Fitzgerald, Children's spontaneous writings, *Peabody J. Educ.*, 1932, *10*, 172–178.

Table 17.—Major Topics Discussed by College Students and Percentage of Total Conversations on Each Topic in Different Student Groups, also Differences Between "Organized" Men and Women, and Between "Unorganized" and "Organized" Women [19]

	Fraternity Men	d	Sorority Women	d	Dormitory Women
Sex interests (dates, dancing, clothes, sex problems)	22	0	22	8	30
Campus affairs (organizations, campus politics, gossip, studies)	28	2	26	1	25
Culture (music, debates, literature, travel)	6	5	11	4	7
Morals (drinking, religion, smoking, public affairs)	10	1	9	1	8
Recreation (sports, trips, shows, stories, games)	15	0	15	8	7
Money and work (money, summer employment, vocations)	9	3	6	2	8
Home (home and relatives, home town)	3	1	4	2	6
Differences, fraternity-sorority and sorority-dormitory		12		26	

Vocational Interests.—So far the data have dealt primarily with recreational and leisure-time interests. What are the findings as regards vocational interests? The usual procedure here has been simply to ask youngsters what they would like to be or do, or have them check on long lists of occupations those which appeal to them most. Vocational choices of older children and young people in high school or college may of course be based not merely on interest but also on consideration as to possibilities for realizing these ambitions. The ambitions, attitudes, and circumstances of the family will also in various ways probably influence their choices. But in so far as such factors do affect interests, the outcomes should be here counted in.

Table 18, which presents typical findings, shows the occupations liked best or preferred most by boys from 8 to 18 years of age. The oc-

[19] Adapted from (50).

cupation most frequently checked was "aviator" (the study was made shortly after the Lindbergh flight and this outstanding preference was presumably somewhat a product of that event). For 8-year-old boys, however, "cowboy" had first place. At 8 and 10 "soldier" also stands high. Yet by 16 "cowboy" and "soldier" were mentioned by too few boys to have a rank assigned! At 12 and 14 "civil engineer" and "electrician" push up into prominence, and by 18 "architect" and "lawyer" have risen to second and third place.

Evidently the findings are consistent with what has already been said about the development of interests. The younger boys are interested in active and dramatic occupations like "cowboy" or "soldier." In middle childhood many of these interests continue; but in accord with the fascination which mechanical things have for many boys of this age, there emerge ambitions toward engineering and invention. As a boy moves into adolescence these last interests may continue, but other interests appear. He may desire to enter a profession, such as law or medicine. The social prestige of an occupation begins to play a part.

TABLE 18.—Rank in Frequency of Occupations Liked Best by Boys of 8½ to 18½ Years of Age [20]

Occupations	Ages					
	8½	10½	12½	14½	16½	18½
Aviator	2	1	1	1	1	1
Cowboy	1	2	2	16		
Lawyer	6	10	7	10	4	3
Civil engineer		8	3	2	3	7
Physician or surgeon	11	10	11	11	6	6
Musician	20	14	10	7	9	5
Electrician or electrical engineer		20	5	3	2	4
Architect			17	4	5	2
Physical director or athletic coach				23	11	4
Soldier	3	4	20			

Girls show throughout an interest in teaching. The little girl's interest very likely is based on the fact that the teacher is the most important woman in child experience outside the home. With older girls various other considerations enter. Teaching is felt to be a genteel and proper occupation for a woman; there are more opportunities in it for women than in most other occupations; it may also be regarded as an occupation from which the transition to marriage is readily made. Interest in and liking for children may be a factor. But other occupations have an appeal. A childhood fondness for painting or writing may, especially if there is much adult admiration of the productions, lead to a more or less permanent artistic or literary ambition. Younger children may show interest in the dramatic occupations of actor or opera singer; in adolescence, occupations which permit great display and attention-getting have a tremendous appeal to some girls. Matter-of-fact girls may, from their home or school experience, develop a special interest in home economics or nursing. In the background of most girls' thinking is doubtless the possibility of marriage, and this consideration operates in various ways to bring about the choice of an occupation which will be likely to effect acquaintance with a satisfactory mate. The appeal of work as a private secretary combines these factors of feminine interest and usually meets with home approval. In short, once more the girls' interests are less active and adventurous; they are more social. Here especially do the cenventions influence girls in various and often subtle ways.

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[20] Adapted from (38).

Table 19, showing vocational desires and actualities in Maryland youth, well exhibits the above-mentioned trends and sex differences and also the comparatively more realistic nature of the girls' ambitions. As will be seen, six of the ten most preferred jobs among the young women were among the ten most frequently entered by them, while none of the boys' most desired positions actually were among the ten most often attained. Apparently the girls are vocationally more realistic or less ambitious than the men, or conventions regarding desirable women's occupations are more sensible.

Both girls and boys show in the high school and college periods the great extent to which the influence of admired individuals may operate. Frequently the youngster decides to specialize in a given subject because of his liking for or admiration of a teacher of that subject. All too often an enthusiastic teacher urges a student who shows such interest (which she mistakes for interest in the subject itself) to continue in that field even though he has little real aptitude and the opportunities are not great. A father may push a pupil toward a certain line of work because he himself had an unrealized ambition in that field. Finally, accidental circumstances may determine the choice.

Studies of vocational interests thus repeat what was said in preceding sections of this chapter. A survey of the data, as one compares choices of young children, youngsters in middle childhood, and adolescents shows a movement from the active and dramatic toward the more intellectual and the socially furthering; conventional attitudes play a large part, and vocational fashions are evident.

TABLE 19.—The Ten Occupations Maryland Youth Most Frequently Desired, and the Ten Most Frequently Entered [21]

Male		Female	
Desired	Entered	Desired	Entered
Engineer	Farm laborer	Nurse	*Housewife*
Mechanic	Industrial laborer	*Teacher*	*Family domestic*
Farm owner	Inside salesperson	*Stenographer*	*Inside salesperson*
Aviator	Unpaid family worker	*Housewife*	Textile operative
Physician	Textile operative	*Secretary*	*Stenographer*
Lawyer	Clerk	Beautician	*Teacher*
Electrician	Truck driver	*Family domestic*	Waitress
Teacher	WPA	Artist	*Secretary*
Musician	Helper	Musician	Clerk
Machinist	CCC	*Inside salesperson*	Clothing operative

CONCRETE REALITY: THE LIFE HISTORY OF INTERESTS

The preceding pages have indicated the general characteristics of interests as shown in play, in reading and movies and radio, in conversation, and in vocational choice. But the discussion so far has been general, and in that respect false. Interests are always the interests of a particular person and are extremely personal; they are relatively specific, often highly so. Ruth likes chemistry, hiking, and John; Madge loves dramatics, dancing, and Tom. Further, interests are the product not of general influences but of highly specific influences in the life of each individual. In fact, a given interest may be the out-working of an underlying urge or circumstance which does not appear in the interest as seen by the outsider at all: John's great interest in chemistry is really a major factor in Ruth's interest in that subject. Harry's interest in travel books is a product of his desire to escape a restrictive and unhappy home. Homely Helen's absorption in romantic movies and the lack of all romance in her own life have their obvious relationship.

Sample Interest Biographies.—To see the concrete reality regarding interests, the interest biography is highly useful; in many ways it remakes the whole picture and gives insights unthought of otherwise.

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[21] Adapted from (1), p. 134. The jobs italicized appear in *both* desired and entered lists and show some congruency of desire with attainment

As a sample of such an approach the following two interest biographies may be of value. The first is that of a young man, a graduate student in psychology.

> Earliest play recollections are of ringing a handbell which mother had hung up so it would ring when he pulled a string, and of digging in the back yard with a toy shovel. A little later (around 5 years of age) much interest in playing train following a train trip and in playing horse following a trip to the grandfather's farm.
>
> When the boy was 6 his family moved to a more northern state. The novelty of a long winter season led to great interest in coasting and such activities as building snow forts. In summer, playing soldier was frequent, this play being led by a neighbor boy whose father's war record was a matter of much pride to his sons. A frequent indoor winter amusement was gathering at some boy's home to compare stamp collections and trade stamps; how this interest began is not now remembered. The gift of *Swiss Family Robinson* led to fascinated reading of this story and then of *Robinson Crusoe* and sundry other stories of adventure. A Christmas present of an air rifle and trips with the father squirrel hunting developed some boyish interest in "hunting." However, because of undetected nearsightedness he was a poor shot, and was also poor in baseball; in consequence his interest in these sports was slight.
>
> In his ninth winter the boy was frequently ill, went to school only irregularly, seemed to have no energy, ability, or interest in active play. His mother bought him some water color paints for home use and he greatly enjoyed painting and drawing. His teacher visited him at home and encouraged him; some of his work was displayed at an exhibit of pupils' work. He was much set up by this and as a result thought of being a designer or illustrator. But with spring came a return of health, and then sedentary interests were forgotten in the returning zest for vigorous outdoor play.
>
> Beginning when the boy was about 10 years old it became the regular practice of the father to give his son certain carpenter's tools for Christmas. This interest in making things had also been fostered by stories which the father told of a little mill which he himself had made when he was a boy, like the real sawmill which the grandfather owned. A workbench was made for him in the basement. At about this same time a new bridge was built near by; all the boys watched the steam shovel and derrick, then with fascination began making model steam shovels and derricks. With a little help from the father the boy was able to make a better derrick than the neighbor boys. And he looked up in his father's encyclopedia about bridges and as a result made a different and better bridge than those the other boys were making. He thus received admiring and even jealous attention from his friends and a great accession of self-esteem. Increasingly he read

widely on mechanical topics and became much interested in being either a skilled mechanic or an engineer.

When he entered high school his father urged him to take a college preparatory program. The boy insisted, however, on including a course in manual training. But the first two weeks of this course disgusted him. He had been making complicated objects, but the manual training instructor insisted that everyone make a whisk-broom holder. The youngster abandoned the course in disgust and became so busy with his high school work that the mechanical interest was dropped.

For a while in high school he was without any definite vocational objective. He became greatly interested in a girl. He took it for granted that he was going to college and that vocational choice could be made later. However, in his senior year of high school he was much influenced by his history teacher, one of the few men teachers in the school. As a result he decided to major in history in college. He had also joined the high school debating society and he became further interested in the governmental problems there discussed.

He went to a small residence college and there found adjustment rather difficult to a different place and different type of student from those with whom he had associated before. He also found himself increasingly dissatisfied with his major in history; history seemed just one episode after another, whereas work in science (he was now taking both chemistry and biology) with its experimentation and its progressive advance to new understandings seemed to have greater potentialities. Further, happenings in history seemed to need explanation in terms of the ideas and emotions of the human beings involved. And his college history professor was stodgy! The combination of concern with personal problems of adjustment, impatience with history and the local historian, and thrill at the potentialities of the scientific method all seemed to come together in a new interest upon taking a vigorous course in social psychology. The major interest was thus changed to this subject. And this individual is now taking graduate work in this field.

It will be seen that this biography begins with very simple play activities and follows through with progressive changes due partly to underlying slow processes of growth in intellect and physiological urges and partly to circumstances such as a train trip, moving to a colder climate, and the gift of tools. Ill health changed the nature of the interests for a time. The influence of parents and teachers was frequently important. So were success and recognition, and also social maladjustment. Both good and poor teachers had their effects. The final outcome is highly individual and personal, but also very understandable once all the main factors are known.

The second biography is that of a young woman, a college student majoring in home economics.

> As a small child her sole companions were boys. She enjoyed their games and pranks, did not like girls' more sedate amusements.
>
> As she advanced in the primary grades she slowly fell away from male companions and took to dolls. She enjoyed treating them for sickness, bandaging their wounds; she came to think that it would be wonderful to be a nurse and help the sick. At about this time an illness took her to the hospital where she remained over a month, becoming even more interested in and acquainted with a nurse's life and duties. After finishing her sophomore year in high school she declared this ambition to her parents. They objected and refused to give their consent to her entering nursing training. She acquiesced in their decision.
>
> In grammar school and the freshman year of high school her teachers had told her that she was talented in painting and drawing. When she gave up the idea of nursing she turned with vigorous reaction to painting as a possible career. She visited galleries and museums, went sketching, and dreamed of a trip abroad for training. This she felt was certainly her vocation. But she gradually came to realize that to be famous would take years of toil and hardship. She therefore put aside this ambition as impractical. However, she liked to cook. And she said frankly that the old adage, "The way to a man's heart is through his stomach," was also a factor in this thinking, as one of her ambitions was to marry. She therefore decided to major in home economics, still keeping in the back of her mind the thought that perhaps sometime she might return to her interest in painting.[22]

This biography shows the importance of playmates as initially affecting interests, the effect of a time in the hospital upon vocational choice—especially strong because of the already present interest in nursing—the influence of parents, and the hope of marriage as a factor in a girl's vocational thinking.[23]

The reader should find it illuminating to write an autobiography of his own interests and to compare it with similar accounts of other students. Clearly interests show certain very general trends, as already described earlier in this chapter, from the younger to the older ages. Generalizations may be made about influences affecting interests—

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[22] The above is a summary of a case study presented in (23), p. 377. The reader may find it interesting to look over the series of interest autobiographies presented in Chapter 11 of Fryer's volume.

[23] Though aside from the topic of this chapter, it should be noted that in neither of the above cases was there informed consideration of probable opportunities in the vocations chosen, or of aptitude for them. In short, both cases well illustrate the haphazard way in which the average young person deals with his vocational problem, and the need for guidance and the lack of it.

physical environment, economic status, conventions. Such generalizations, however, are very inadequate for understanding a particular individual's interests at a particular time. His interests are a complex resultant of his total history. They cannot be understood from generalities but must be seen in the perspective of his total life experience.

Interests and Feelings.—The first impression one obtains from the interest biography is the extent to which each person's total interest pattern is an individual thing. But consideration of such biographies —and especially of one's autobiography with all the vividness that one's own life has to oneself—emphasizes a further point. A generalized treatment of interests leaves the topic objective and cold. To the person concerned (to oneself), however, an interest is a dynamic and feelingful matter. Surely one's interest in high school in a certain high school girl was stirring and had feeling-tone aplenty. But those boyhood October afternoons—what with the sharp weather and abounding health one's whole body seemed to hunger for activity. To run and jump and shout was a highly desired and delightful thing to do, whereas to be still made one restless and miserable. To be mentally active (in one's own boyish fashion) was also natural and interesting for the healthy nervous system, and there was a restless urge to talk, ask questions, solve puzzles, make things.

The vicarious experiences of reading, movies, and radio similarly involve feelings. As has already been seen, objective physiological evidence shows that melodramatic or romantic moving pictures get right down into a youngster's vitals, stirring his pulse and undoubtedly his impulses and emotions. To have an interest is to feel a hunger, an urge, a craving, a restlessness. And when one is in the grip of an interest, he has excitement, thrill, satisfaction, and a sense of expanding well-being—or letdown, discouragement, frustration—according to whether the interest is satisfied or not. Obviously his interests—and their gratification or denial—are a matter to which he is acutely sensitive. Some interests may be superficial and relatively unimportant. But back of and giving energy to the total complex of interests there appear to be basic organic drives. What happens to a person's interests appears vital to his organic health; if they suffer serious injury his feelings are touched to the quick. Since different people have different interests and those of adults differ from those of children or adolescents, it is easy for a teacher to be uncomprehending of a pupil's interests or to treat them lightly or even with impatience or scorn. She is surprised or angered at the strength of the pupil's reaction to this slight. She should keep always in mind how interests and feelings are thus part and parcel one with the other, and let her tact be guided by a study of her pupils' interests.

Interests and Success.—Mention was made a few sentences back of the feelings of expanding well-being which come with satisfaction of an interest, or of letdown and discouragement if the interest is frustrated. Here is a second major point that emerges from the biographies: an interest grows and flourishes if it is satisfied and if it is approved and brings recognition, but tends to weaken if such consummations are not obtained. The boy's craftsmanship and the girl's painting were recognized as good and these interests became strong. Baseball had slight interest for the boy because he was poor at the game, and the girl's interest in nursing dropped when the parents disapproved. Interests feed on success and on the attention-getting and approval which are social success; they starve if success and approval are lacking, and either die or manifest themselves in desperate or morbid fashion (facts so important that they will be given treatment in a later chapter).

THEORY AND APPLICATION

Understanding of interests has been sought by study of play, of such amusements as reading and radio, of talk and vocational choice, and of development of interest in the individual. The question now is whether from this overview the basic elements in interest may be determined, the important influences shaping them noted, and suggestions for their nurture derived. The writers suggest that the total situation may be interpreted with reasonable adequacy as follows.

Basic Urges.—Back of particular interests, and the source of their energies, are certain physiological tensions or pressures or urges. Of broadest and greatest importance is the urge toward activity normal in any healthy organism. That dogs should run about and bark or children run and jump and shout requires no special explanation; such a "going off" of the healthy organism is simply the normal and inevitable product of structure and organic constitution (failure to be active *would* call for explanation). Such activity is not limited to mere physical exuberance but also includes mental activity, i.e., curiosity, playing with ideas, imagining. During the years of growth this basic urge or pressure to be active is strongest; restless energy is recognized as characteristic of childhood and youth. In adolescence appears the powerful urge of sex. This causes a lift in the total energy of the organism and gives a sex-social direction to it. This redirection is the basic background phenomenon during adolescence. These two physiological urges, the pressure for activity and the pressure of sex, are (the writers contend) the two major drives behind human doing and thinking. Other physiological pressures or tensions are in the background, however, such as the urge of hunger and appetite. The discomforts of heat or cold make the individual seek more pleasant conditions. The total of all these physiological stirrings, restlessnesses, and urges is the force back of any interest or activity.[24]

Into the complex urges and tensions of the normal organism may come the special peculiar tensions and discomforts of physiological malfunctioning, pain, or illness. If these discomforts are strong and the individual is weak, he may be preoccupied with them largely to the exclusion of other urges. The sick child has little attention (or vitality) for other interests.

These are the background physiological pressures that are the driving power behind human interests and activities. To these "elements" must be added one major derivative. The one most evident, most useful fact learned in helpless infancy and dependent childhood is the importance of favorable attitudes on the part of other people. The competitions of middle childhood and the sex interests of adolescence enforce this social sensitivity. Little wonder, then, that hunger for attention and for approval of others appears very early and, enforced by the sex urge, grows until (once the most elementary physiological demands are somewhat satisfied) it is the most powerful of all drives. The drive is not easily satisfied since the various groups from which the growing child wishes to obtain acceptance—home, school, gang, and community—tend to set up still higher goals as he attains initial status.

The strength of these basic drives is very different in different people. Thus in some children the urge to activity is almost feverish, whereas others are listless. Sex is much stronger in some persons than in others. Some show hysterical craving for the approving attention of others, but a few people seem almost indifferent. This, very briefly, is the concept regarding the basic urges behind the interests of children and young people. What inferences and implications valuable for education follow from this concept?

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[24] Perhaps it need hardly be said that the above statement grossly oversimplifies the facts. Nothing less than the entire organism of the healthy child is back of the urge for activity; any attempt to give adequacy of treatment must call for mention not only of tonus in the neuromuscular apparatus but also of nutrition, the functioning of the various ductless glands—all the various organs and functionings in organic coordination.

In the first place, any educational program which involves an effort to block one of the basic urges or drives is sure to cause conflicts and disciplinary problems and to lack vitality and interest for the pupils. The old-fashioned school which asked children to sit still and be quiet was contrary to nature. The conservative secondary school (or college) which separates boys and girls at just those adolescent ages when they are most interested in each other and might be going through processes of healthy acquaintanceship is contrary to nature. The school at any level which rules it wrong for pupils to talk together and work together is ruling against the most established and pervasive of all human tendencies and one of the most desirable.

In the second place, if vigor and liveliness of interests have their origin in physiological pressures and urges, a first step in stimulating a pupil's interests should be to see that he is vigorously healthy. Undernourished ill children usually have sluggish dragging interests. They may be docile in the sedentary program of a conventional school. Genuine and effective interest in play or in the undertakings of a modern school must stem from the energy in a sound physique—the neuromuscular system in good tonus and quick to respond, the ductless glands all making their proper and balanced contributions to the internal chemistry, nourishment reasonably adequate, sleep sound and long enough, and the system not burdened by injury or disease.

Up to now Harry had been interested in his school work and active in play. But this September he was listless in school, seemed bored with his work, participated little in the doings of his neighborhood gang, did little with his stamp collection. Investigation showed that the family had just returned from a trailer trip in which sleeping quarters had been cramped, hours of rest irregular, diet poor; constipation had alternated with diarrhea, and Harry had suffered from a chronic cold. His teacher's efforts to interest him in his schoolwork proved entirely futile, but with gradually returning health his interests slowly returned.

Limiting and Stimulating Conditions.—Taken for granted, but its pervasive importance usually missed, is the fact that interests are highly adaptable and responsive to the conditions and circumstances of each youngster's life. His playthings and play places, the resources of the family as regards a car and money for amusements and clothes, the resources of the community as regards recreation and vocation—these factors in total are for the average person largely definitive as to what his interests are.

Mr. Thompson grew up on a farm forty years ago. As a boy he hunted and fished, enjoyed helping his father look after the farm machinery but did not like the farmwork, was fascinated by the trains on the railway which ran along one side of the farm. There was little reading matter in the home except a farm journal and the newspaper from the small city up the line, no school or village library, no radio or moving pictures or automobile, no organized team games because of the small number of boys of the same age who could conveniently get together. Social contacts were restricted to the immediate neighborhood and social affairs centered around the church; there was no dancing or card-playing, no money or time for vacation trips, parties, shows. Mr. Thompson left school at 14 to help on the farm, married a neighbor girl at 19, and moved to the nearby small city to work for the railroad which had so fascinated him as a boy. Now he is a locomotive engineer.

His son Tom, growing up in the comfortable suburban home, has had no farm or other work to do, no occasion to tinker with machinery. Instead, sports (fostered by both the schools and the city playgrounds) have absorbed his energies, and he has been a Boy Scout. Parts of two summers have been spent in a camp. In comfortable circumstances, the family has all such modern conveniences as an automobile and radio; magazines and movies are commonplace, as are also week-end trips which would have been the event of the year in his father's boyhood. Tom is now a high school senior and is on the basketball team; dances and dates are a taken-for-granted part of his active social life. He rather looks down upon his father's rough heartiness of manner and also feels a little apologetic about his father's job. Tom plans to go to college and enter business or perhaps become an athletic coach. Constitutionally he and his father are much alike. But the different circumstances of their lives have developed very different interests.

However, conditions which either limit or stimulate interests may be found in the individual as well as in his environment. Obviously a deaf child is likely to have little interest in music, or a crippled child in active sports. Such factors are of much more frequent importance than these extreme examples would suggest. A big strong boy has the energy and strength to initiate and foster an interest in athletics for which the puny lad has neither vigor nor capacity—though the latter's inadequacy might find compensation in fiction about athletes. The girl with the lovely voice would be strange indeed if she did not like to sing. The dull boy will hardly enjoy chess or debating or mathematics but the bright youngster may. In general, interests and capacities go together.

Tom (discussed above) was a husky active lad for whom athletics was as natural as the tussling of two puppies; the admiring regard from his associates which his athletic powers brought him accentuated that interest. The total pattern and development of his interests was very different from that of his classmate William, who was short, slight, and bright. William longed with a great longing for physical strength and status and tried to make the track team, but without success. His urge to achieve some sort of recognition frustrated at this point, he put himself with special vigor into debating. And he tried extra hard to be agreeable since he could not muscle his way into popularity.

The practical applications of the above facts are so obvious that there is danger they will be neglected. A playground creates different play interests from those which grow in slum alleys. Having the schoolyard open for after-school and summer play and the school "industrial arts laboratory" open evenings for the hobbies of both boys and their fathers will affect the interests of the neighborhood. Playthings are a subject deserving discussion by teachers and parents as interest-making materials. A community hall or church may foster active games, socials, dances, and dramatics, and be a major influence in shaping the interests of the community. Yet in a city known to the writers the largest church would not permit young people to have social gatherings in its big basement room because the carpet might be damaged, and the school board would not open the schools at night for the same purpose because it would add to the heating bill! But a night club just outside the town limits *was* open and not grudging in its welcome. The high school in one small city had only an academic program, but a nearby school of about the same size offered practical industrial arts, secretarial, commercial, and home economics courses, and had a vocational counselor in touch with the community's business and industrial life. Various feasible vocational interests were thus stimulated and furthered, and brought fruition in jobs after graduation.

One high school the writers know about had no athletics except for its interschool teams and no music except its much-featured band with its much-photographed drum majorette. Another big school had football teams for boys of different weight groups, included such simple and inexpensive games as paddle tennis in the program, and aimed at an athletic program broad enough to include something for everyone. It had not only a band but orchestras and glee clubs and informal sings. Obviously this school stimulated a greater variety of athletic and musical interests in a far greater number of pupils than did the first.

The Anthropology and Sociology of Interests.—The preceding section stressed how a person's interests are shaped and limited by the physical conditions and circumstances of his life, and by his physique and capacities. It must now be pointed out that important as are these potentialities of the environment and the self, even more important are customs and conventions, fashions and fads which bring it about that in a particular group certain things are accepted or admired as *the* things to do, but other interests are considered inappropriate or even taboo. In the example above, hunting and fishing were interests every country boy of the father's generation was expected to have, whereas football and basketball were expected interests in the son's group. Dancing was expected of the son but taboo in the father's boyhood. Railroading had glamour and status in the father's boyhood group but was somewhat looked down upon in the son's more sophisticated society.

But the total culture and way of life in which this father grew up were more different from the interest-molding culture of his son's youth than the above examples show. The competitive urge to beat someone—to beat the rival classmate for the place on the team, to help the team beat the rival school—is pervasive in the life of the present-day high school boy but was largely absent from the rural boyhood of his father. Similarly an investigation by one of the writers showed girls in a mid-west community to be distinctly less interested in cooking and sewing now than twenty years ago, and more interested in athletic team games. As will be pointed out in a later chapter, high school social life is far different today from social life in the father's youth; now a dominant desire is to be among those who "belong," but such social striving and climbing were slight among the father's boyhood associates. Now sex-stimulating association with girls is more frequent. Going to church and interest in religion are less part of the accepted and expected way of life.

If the differences in one mid-west family over one generation can be thus great, how much greater are differences over longer periods of time, or from one nation or race to another. Organized team games were an Anglo-Saxon development, until recently not popular on the European continent. For a boy to have mechanical interests is part of the American tradition but less an approved and fostered interest among boys in Europe. Vocational interests are different here than there. And if interests in non-European cultures are examined—the development of interests among young people in India or China or Samoa—then indeed are striking differences found.

Great differences in interests between one time and place and another may thus be found. But all the time, flickering over the surface of these larger movements, there are less important changes in interests. Mah-jongg and the Big Apple and the Bunny Hug have their vogue and then are forgotten. Sleek sloe-eyed vamps and swarthy sheiks are the movie rage; then curvesome blonds come in. Lindbergh and Al Capone and J. Edgar Hoover in turn are in the spotlight; publishers and movie producers feature aviators or gangsters or G-men; boys' play and ambitions run the same way. Handies or Little Audry stories are all the rage and then forgotten. A particular school or a particular high school crowd may have its own little fads and fashions.

In sum, the total society in which the individual grows up has an enormous influence upon his interests; within the limits set by his capacities and the gross circumstances of his life, a person's interests are primarily the product of the culture and the society in which he lives. It *is* possible, by persistent shrewdness, to modify and even direct these influences. A vigorous teacher can make it the thing to belong to the glee club or the Latin club or the home economics club. A school can easily stimulate interest in the basketball team but it can also arouse much interest in a Red Cross Drive. Its policy with reference to secret societies will have an important influence on the nature of the social interests of its pupils. A single enthusiastic community leader can make music a major interest of the young people in the town. The European dictators have given frightening examples of the extent to which the interests and ideals of an entire nation can be controlled. But molding of interests by national leaders can be more admirable. Interest in strenuous activity, and in honest public affairs, was strengthened by Theodore Roosevelt. Now there is stimulation of interest in conservation, welfare, democracy. Leadership can thus do a great deal in school, community, nation.

The Nurture of Interests.—An interest must, then, have its roots in the basic urges. It must be reasonably adapted to circumstances and abilities and the local culture. If it meets these prerequisites it may grow with such vigor that almost overnight the individual seems possessed by it to the exclusion of all other concerns. Or it may languish and die like something that has received a mortal injury. What are the powerful influences that may thus operate? They are two in number (but fundamentally one). An interest grows with tropical lushness in the warm sun of success and approval. It withers if not so nourished and stimulated, may even be blighted by only one devastating experience if instead of success and approval it meets ridicule or contempt and failure. An interest is essentially a thing alive. It is alive with feeling. It feeds on success—and on the attention-getting and status-achieving which are social success. It cannot be nourished otherwise.

Now the application to teaching. It is really very easy for a teacher to control the interests of her pupils, to stimulate desired interests and eliminate the undesirable (of those interests which meet the prerequisites mentioned above). All she need do is see to it that her pupils succeed with the desirable interests and achieve status with their fellows and her in so doing, but do not obtain success or recognition from interests which are not to be fostered.[25]

A certain small boy in grade school loved to sing. One day the singing teacher was testing the voices of various pupils. This youngster, too eager, sang with uninhibited boyish vigor. With an annoyed look which the child did not miss the music supervisor said, "At least he has volume." The other children snickered and the boy was never interested in music again. Contrast this episode with the way in which interest in drawing was stimulated in the first case mentioned in the preceding section of this chapter. Both the boy's teacher and his mother helped him so that he made great progress in it. They approved and admired his work. The exhibit of some of his sketches at school gave him status with the other pupils and his interest was much stimulated by that outcome.

SUMMARY

The chapter attempts, by a survey of recreations and amusements and preferences as to work and pleasure, to determine the nature of interests and the factors which shape them.

1. Play develops, in step with the growth of the organism, from simple and individual to more vigorous, complex, and social activities, then becomes dominated by sex-social interests in adolescence. Great individual differences are found in the nature and variety of play ac-

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[25] The critical reader may well feel that the above discussion overemphasizes the modifiability of interests and gives too little recognition to biological determinants. Very likely so. Constitutional sex differences in interests may be subtly important; surely sex differences in total physique, ductless gland balance, and strength are such as might include or cause differences not only in aggressiveness but in the direction of interests. As will be seen in the next chapter, sex differences in social behavior appear very early. Perhaps the pendulum of professional thinking has swung too far away from the concept of innate behavior patterns. But the statement in this chapter seems reasonably in accord with empirical observations. If it errs a bit on the side of euthenics it at least takes the more optimistic and effort-stimulating point of view regarding human nature and its possible betterment.

tivities as well as in the extent to which they are social. Physical and mental ability, circumstances, and especially the attitudes and customs of the group in which the individual lives are the important factors involved in differences from age to age and within any age group.

2. Data on reading, movies, and radio make still clearer the development from simple and active interests in childhood to the sex-social interests of adolescence. They show also how the ready-made vicarious satisfactions of fiction may take the place of real consummations when major interests are blocked or starved in real life. And they show how amusements in turn may modify or stimulate interests.

3. Study of conversations and vocational choices once more point out the fundamental development from the simple and active to the more complex and sex-social. Again the importance of social and economic circumstance and of conventions is enforced.

4. Interest autobiographies emphasize the fact that interests are perhaps the most modifiable of all human traits. They are at the source of feelings—are vivid with feeling. They change, grow, or wither according as they achieve success and approval or are blighted by frustration and loss of status.

5. Interests are held to draw their energies especially from three basic urges: the urge to activity, the sex urge, and the urge for attention and approval. They develop within the limitations of the individual's physical and economic environment and his physical and mental capabilities, and according to the patterns set by his culture. Within these limits their development depends upon the extent to which they reach the consummation of success. From these considerations, applications to education can be made which should be of distinct help in efforts to direct and control pupils' interests.

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CHAPTER VI

The Development of the Emotional Life

Thus far children and adolescents have been pictured as having a great variety of interests and eager for their fulfillment—for recognized accomplishment and companionship and approval. It was stressed that the development of an interest depended upon the extent and nature of that fulfillment; an interest might grow greatly if nourished by success experiences, or wither if meeting only failure. Such outcomes must now be given more detailed consideration, with special reference to the cumulative effects of repeated experiences of one type or the other. What are the effects of continued failure and frustration of interests, of chronic neglect or disapproval from teachers or associates, or of continuing uncertainty and insecurity? How much difference does it make if, instead, a youngster usually has reasonable fulfillment of his interests, is usually approved, and feels that his world can be depended upon to act consistently in these respects? Here is a problem of outstanding and pervasive importance, on which much important work has recently been done. For teachers, the problem is central as regards their relations with their pupils—and their own success.

Shy, shabbily dressed Jim had been "carried along" into the fifth grade, but it was obvious to everyone that he could not do the work there. He was chronically scolded by an impatient teacher, either disregarded or teased by the other children, clumsy and unskillful in games, criticized and bullied at home. The boy was in a chronic state of bewilderment and fear because in most of the situations he had to meet he did not know what to do and was in constant dread of failure or rebuff. Largely similar in the nature of his difficulty but not in most other respects was a highly intelligent college freshman doing night work to earn his way. Because of lack of leisure and inconvenient hours of work he had made no friends; irregular and inadequate meals had disturbed his digestion; fatigue and loneliness and poor health had finally so upset him that he had failed a course. He was bewildered and on the verge of panic because he did not know how to meet the manifold problems presented by his first college year.

In contrast, plump Polly found her high school lessons easy. Youngest in a large family well known in the little town, she was popular with both students and teachers. Confident, active, smiling, a picture of health, she well illustrated how consistent success experiences (including satisfactory social adjustment) foster effectiveness, pleasant emotional tone, and physical well-being.

A FUNCTIONAL CONCEPT OF EMOTION

The basic concept is, then, that the nature of a person's emotional experiences depends on the extent to which his interests and urges are satisfied. If his interests and drives are frustrated, he will be unhappy and either timid and withdrawing or angry and aggressive. In fact, results of frustration may be varied indeed, and will depend upon a great variety of factors such as the individual's stage of development, health, previous experiences, present status, and the way in which the immediate situation is handled. But it often seems forgotten that habitual success experiences also have important and largely opposite effects upon the personality; there is not frustration but furtherance. These various features and types of emotion must now be considered in more detail.

Physiological Effects of Emotion.—Certain physiological involvements of strong emotional episodes are well recognized. A person may tremble from either rage or fear. In fear or embarrassment (as before an audience) the mouth becomes dry from constriction of peripheral blood vessels including those to the salivary glands. In excitement the heart rate and blood pressure go up. The digestive system may be markedly affected. It is common to hear a person say, after some emotional experience, that he was "too excited to eat." It is a well-known experimental fact that emotion reduces the normal digestive movements and the secretion of digestive juices. There may be either constipation or diarrhea; the "examination diarrhea" of some students is a well-known college phenomenon.

These are the effects of strong emotional episodes. More important but less generally recognized is the fact that chronic emotional distress causes chronic conditions of these same types. The timid, often-rebuffed youngster may not actually tremble, but he is likely to be hesitant and awkward in his actions and to stammer in his speech. Appetite and digestion are likely to be poor, and he may be underweight. Disturbances of sleep are frequent—restlessness or nightmares in sleep, and trouble in getting to sleep or frequent waking. Because sleep is not restful, there is chronic fatigue.

The extent to which children presenting emotional problems show various symptoms such as have been mentioned above is illustrated by the following tabulation. It gives the percentage of children brought to a clinic in the first instance because of fearfulness, who showed other difficulties.[1]

Sleep disturbances	65%
Feeding problems	45%
Temper tantrums	34%
Nail-biting	33%
Enuresis	29%
Crying and whining	18%
Masturbation	8%
Stuttering	6%

In contrast, the child who has reasonable satisfaction of his interests, and the social satisfactions of companionship and status, is likely to be ready of movement and of speech, to have good appetite and to sleep soundly.

Possibly the reader may have had this experience: The imminence of an important examination or interview or other critical occasion so worried him that he had trouble sleeping, dropped things and stumbled on the stairs, started and stammered when spoken to, found food less interesting, was constipated. Then if the crisis was passed successfully he found himself perhaps a little too active and talking even a little too readily, eating very heartily, and having an almost immediate marked restoration in the tonicity of the bowel.

Effects of Emotion upon Intellectual Efficiency.—As was mentioned in the chapter on abilities, emotional distresses and frustrations interfere with intellectual efficiency. The unhappy individual seems abstracted, has difficulty keeping his mind on a task, and may become so emotionally blocked as to be unable to do anything at all. But as was also mentioned in considering the growth of special abilities, interests which come through and which bring approval and status make abilities grow.

One student, who was supposed to be taking a final examination, spent most of the time staring at the paper or out of the window. Occasionally she moved restlessly and wrote a few sentences, then relapsed again into inactivity. The girl had up to this time done fairly satisfactory work. Upon investigation it was discovered that her parents had decided to obtain a divorce on particularly unpleasant grounds, and that for about a month both had been pouring out their difficulties to her. All her feelings and affections for them were now thrown into confusion. She was fearful of what people would say. Gradually she became more and more unable to concentrate and more fatigued, until finally she came to this blocked condition in which she could remember nothing or make any progress whatever on the examination.

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[1] Adapted from Kanner (35), p. 289.

In contrast was a music student. She had not been doing outstandingly well. But to her delight she was chosen for a solo at a recital. She practiced as never before under the stimulus of this recognition, did well, applied herself yet harder, became one of the best musicians in the school, and chose the teaching of music as a career—all largely because of the emotional stimulus of these satisfactions to her desires to achieve status and to do well.

These two cases were somewhat extreme. Even mild frustrations, however, are likely to interfere somewhat with intellectual efficiency, and mild success make it more effective. A somewhat unusual experiment with 24 high school seniors is of interest here. At the beginning, each boy was asked to wait a few moments in a comfortable reception room where he thought himself alone, but really was being secretly observed as to whether he played with some games placed there, looked at pictures and other objects, or sat and daydreamed. Then the experimenter came in and had the boy sort a pack of cards 15 times. With half the boys the investigator was bored and contemptuous of their work and faked a record showing them to have done far below the "norms." With the other lads he was congratulatory and enthusiastic, and faked a record showing very superior work. Then again the boy was left alone, and the concealed observer watched what he did. On the second day card-sorting was done again in the same way with each boy, with concealed observation again following. But after that, both groups were given a somewhat different task, and all were praised and "made to feel as phenomenally successful as possible"—then secretly observed again. Table 20 shows some of the things these boys did when alone, after these experiences of "success" and "failure."

The first line shows changes from the initial observation in number of 5-second intervals spent in daydreaming or just sitting. The second line shows similar intervals spent looking at the norm sheet and record sheets. The third shows total number of times in each group that a boy, when alone, started sorting the cards again of his own volition—but never finished the job. Clearly failure caused these boys to turn away from their record and either withdraw their minds from the task or fumble in discouraged and inefficient fashion with it. But the boys who were happy with success examined the records closely, put their minds more to the immediate situation—and never once tried sorting the cards without finishing (23).

This experiment is an interesting demonstration of a phenomenon commonly observed. If such outcomes can be obtained on only two days of experimentation, it can well be appreciated that months or years of continued failure might establish habits of turning away from work, or of discouraged inefficient fumbling with a task, which would be of great characterological importance. Or success might increase competence.[2]

Table 20.—Effects of Success and Failure upon General Behavior When an Individual Thinks He Is Alone and Unobserved (24 High School Senior Boys). Change from Initial or Pretest Observation, in Number of 5-Second Intervals Spent in Three Different Ways [3]

	"Failure" Group			"Success" Group		
	First Day	Second Day	Final Success	First Day	Second Day	Final Success
Daydreaming	3	8	1	−6	−2	1
Looking at record	2	1	0	9	5	4
Unfinished sortings	26	11	5	0	0	0

Effects of Emotional Conditions upon General Attitude.—Emotional strain and frustration may cause attitudes of timidity and withdrawing or of irritability and aggressiveness. Such attitudes may appear significantly only in certain situations or in the presence of certain people. Thus a high school freshman was surly and aggressive in his attitude toward his Latin teacher; her sarcastic criticisms of him in class had affronted his pride. But he was shy and apologetic in an after-class discussion of his troubles in algebra with the teacher of that subject, since no such injury to his status before the other pupils had occurred. The attitude may be more general, appear elsewhere than at its source, or show only where it is safe; for example, a child may be irritable and aggressive at school because of a brutal father, or a father may be irritable at home because of a domineering foreman. It may become general; a sensitive child who has been criticized and humiliated for failing a recitation may soon come to dread reciting, then teachers and school, may play truant, have trouble at home—and become a runaway from all authority. Moodiness due to distress at home may become the habitual emotional tone.

It has been shown experimentally that frustration makes attitudes in general less favorable to other things and persons. Thus, boys at a summer camp were prevented by a tedious examination from attending bank night at a local theater. Before and after this frustration they indicated by a rating scale their attitude toward Mexican and Japanese (half rated Mexicans before the frustration, and half afterward, so that initial attitudes would be balanced). The attitude toward either set of foreigners was less favorable after the frustration (18), p. 43. The attitudes of poor and frustrated southern whites toward Negroes may show an analogous displacement. It has also been found that voters in rural districts are likely to vote officeholders out after a season of poor rainfall, though it was obvious that they were not responsible for the weather.[4]

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[2] A section in chap. xii will develop further the effect of emotions on learning in school.

[3] Adapted from R. R. Sears, Success and failure, a study in motility, in (23), pp. 235–258.

In contrast, the person whose interest has found fulfillment is friendly with the people and circumstances about him, since they are fostering satisfactory experiences. If he is receiving the satisfactions of recognition and felt accomplishment in school, he comes to participate readily (perhaps too readily) in class discussions, likes teachers and school, and may from his satisfactory school experiences develop a general attitude of friendly confidence in his relations to those in authority.

A word frequently used nowadays is morale. One psychological dictionary defines morale as "the individual attitude in respect to confidence, perseverance in work, and adherence to ideals." Clearly the extent to which the individual habitually has success or failure, and so develops confidence or hesitancy in his efforts, is a major factor in morale. Also morale usually involves an identification of oneself with some group purpose—involves "belongingness." And this belongingness can hardly develop except where the youngster has a status and feeling of security as a result of reasonable success in his social relations.[5]

The Sociology of Emotional Development.—The above point of view would make home and community conditions important factors in emotional development. Evidence stresses that this is so. Thus in one city it was found that there were only 86 maladjusted[6] school children per 1000 school enrollment in approximately 1800 square city blocks having residences of the single-family type. But in approximately 750 square city blocks of the multiple-family type of dwelling such as rooming houses and apartments, there were 183 maladjusted children per 1000 enrollment. Fathers of maladjusted children were classified occupationally as follows: 67 per cent were unskilled laborers, 22 per cent semi-skilled or skilled, 8 per cent clerical, and 3 per cent professional. Ninety per cent of the families of maladjusted children had inadequate income (less than $800 per year for two or more persons). Of the maladjusted group, 15 per cent were found to be living with neither parent, 20 per cent with one parent who had been divorced and remarried, 62 per cent with their mothers alone, and 3 per cent had neither of the parents living. Whereas in the community studied there were 1.8 children in the average family, the maladjusted children came from families averaging 2.5 pupils enrolled in school. Almost 5 per cent had moved more than seven times within a single year. Sixty-six per cent of the homes were rated poor or very poor by welfare workers.

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[4] Amusingly illustrative of shifts in general attitudes with frustration is the case cited by Murray (46) of the boy who had recently had a falling-out with his girl. When asked to give an estimate of the state of the world in general, he wrote: "I believe the world is going socially and morally to destruction. Society is on the downgrade now, even as that of Rome." It would be interesting to know what his attitude toward the world in general would have been if the two had made up.

[5] It must not be inferred from the above emphasis on the desirability of success experiences that the individual should have *all* his paths smoothed and efforts made successful. It is only desirable activities which are thus to be fostered; but they must be so fostered if they are to develop and if there is to be good morale. However, a point shortly to be stressed must here be anticipated. Frustration may cause increased effort—sometimes mere fruitless anger, but sometimes (as in the lives of many famous individuals) a drive that accomplishes more than might otherwise have been expected. If this last is to occur, there must be no collapse of morale. The individual must find a way in which he can succeed—into which he puts himself with increased satisfaction and vigor because frustrated elsewhere.

Somewhat aside, though a product of the total socio-economic circumstance at least in part, are these further facts, that 35 per cent of the seriously maladjusted school children were 10 per cent or more underweight, as compared with only 5 per cent of the total school enrollment. When the seriously maladjusted boys were taken to a mountain camp for three weeks, they averaged a gain of eight pounds during the first two months of the new school term. None came before the school authorities for serious problem behavior during the two months' period in the autumn. Of the seriously maladjusted cases, only one was a Boy Scout and he was not in good standing.[7]

Changes in Emotion with Age.—Being thus a function of his interests and the extent of their fulfillment, which in turn are a product of his growth and the circumstances of his life, the individual's emotional nature should show a consistent development in congruence with all these facts. Nicely illustrative of this development is Chart 28. It is based on results from over 5000 cases and shows changes in worries or anxieties from Grade 6 through college.

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[6] The question may be raised as to whether "maladjusted" here means "emotionally maladjusted." The writers believe that essentially it does, in the sense in which these terms are used in this volume. That is, these children were bewildered or frustrated, the fulfillment of their interests was hampered. They were considered maladjusted because of evidence to that effect.

[7] James F. Bursth, Home and community conditions related to pupil maladjustment, *Fifteenth Yearbook*, National Elementary School Principals, 1936, *15*, No. 6.

The chart is based on unpublished data obtained with the "worries" test of the "interest-attitude" tests. This test consists of a list of 90 common topics of anxiety such as money, clothes, morals, appearance; and the directions are to put one cross before matters about which the individual worries or feels fearful, and two crosses before items about which he has been very fearful or worried much.[8]

Most obvious is the marked anxiety about physical dangers in the younger years and the way in which these are almost completely re-

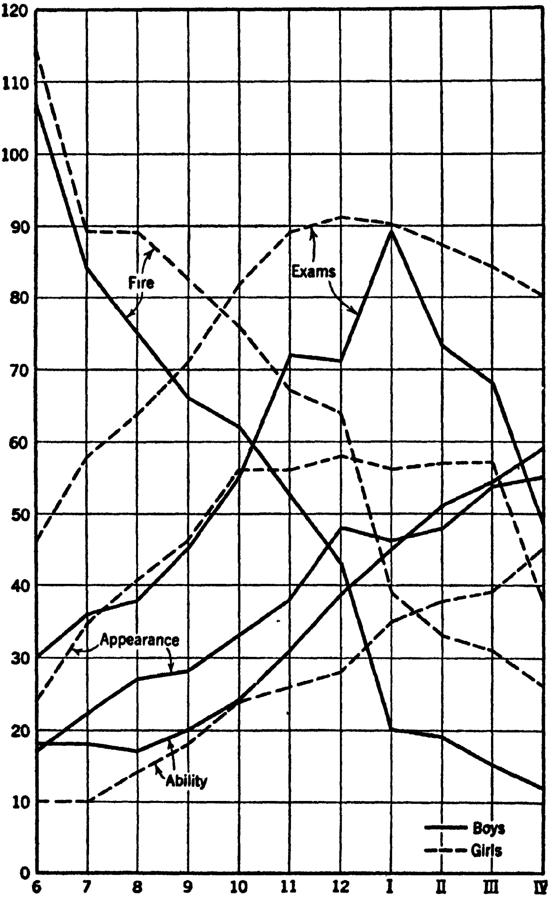

CHART 28.—Changes in worries with age, Interest Attitude Test. (Number of crosses for each word per 100 cases.)

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[8] The tests are described in the *Journal of Applied Psychology*, 1933, *17*, 1–16.

placed by what might be called socio-economic worries by the end of college. But the sex differences must also be noted. The girls are apparently more timid about physical dangers such as fire. They show an earlier and (until the last two years of college) much greater concern about appearance and also about examinations. Presumably the earlier sex-social maturing of the girls is here evidenced. Perhaps the falling-off in these anxieties in the later years of college is a result of assurance (or acceptance) regarding these matters by that time. The boys worry more about ability and money. Clearly emotional development is a complex phenomenon, interrelated with all the other phenomena and factors discussed in this book.

It is often said that a person is or is not "emotionally mature." Presumably the expression refers not alone to such development as was mentioned above, but also to the extent to which emotional responses are under control. A 2-year-old in a temper tantrum may be thought of as not immature for his age. But a similar display in a 12-year-old would be regarded as a demonstration of immaturity. For a discussion of the concept, see (40), Chapter VII.

COMMON CAUSES OF EMOTIONAL STRESS IN CHILDREN AND ADOLESCENTS

From the above discussion it is clear that almost any situation may cause emotional distress if it is so hampering or so unfamiliar to an individual that he does not know how to satisfy his interests or desires. However, certain such confusing or frustrating situations occur so frequently during the school years that they deserve brief mention. As will be stressed shortly, the first step in dealing with an emotional problem is to find the cause.

Adjustment to a New School or Neighborhood.—Emotional distress may be acute as a result of transplanting a child or adolescent from one environment to another, if circumstances interfere with his ready fitting into the new one. Every nursery school, kindergarten, and first-grade teacher knows that the first day or two of school is a time of great perturbation for many children because they do not know how to get along with the other children or to behave in their strange new surroundings. A somewhat similar difficulty appears upon entrance into junior or senior high school or on going away from home to college. Each time the young person may feel so uncertain as to what to do or how to satisfy his interests, and so insecure as to status, as to be greatly excited and distressed. Moving to a new neighborhood, especially if it is distinctly different from the old, may cause similar upset.

The boys in a neighborhood expect a newcomer to make good his status with them; thus freshmen are hazed. As was mentioned in the preceding section, maladjusted children often come from families which have frequently moved about.

A friend of the writers as a boy, because of the itinerant nature of his father's work, went to 22 different grade schools. He never had a chum or felt secure enough in any neighborhood or school to indulge freely any of his boyhood interests and desires. His most vivid boyhood memory is of a teacher who understood his problem and, in the five months he was in her room, helped him really to participate in the school life.

Adolescent Social Adjustment to the Other Sex.—Adolescent boys and girls trying to satisfy their desires for companionship with the other sex are often acutely distressed. For instance, a high school boy calling on a girl for the first time did not know how to leave, nor did the girl know how to suggest his departure. Two embarrassed and miserable adolescents sat in the front parlor until well after midnight, talking of the same things over and over again, until at last the girl's father intervened and none too tactfully started the lad on his way. The next day the story was circulated by the father as a joke; but it was no joke to the boy and girl concerned, both of whom developed antagonisms and fears that remained with them for years.

Anyone can remember incidents of a similar painful nature involved in efforts at heterosexual adjustment. Who has not known a boy who secretly worshiped some girl for weeks but did not know how to approach her? Or the girl who was introduced to a most charming young man—and then could not think of a thing to say? Or the boy who takes a girl out for the first time and does not know which show to see, whether or not to buy her a soda afterwards, or if she expects to be kissed when he leaves her? Who can forget the distress he or she went through, at one time or another, in regard to the suitability, in the eyes of the opposite sex, of one's clothes and appearance and manners? Such adolescent crises may be amusing to adults, but to the adolescents concerned they are potential or actual tragedies.

School Failure as a Cause of Emotional Problems.—Continued failure in school, as has already been stressed, is another common and potent cause of emotional disturbance. The extent to which frustration of a youngster's desire for success and status in class and consequent regard at home may torture him is often not realized by adults. Every year there are newspaper reports of young people who have killed themselves rather than face further such agony. The number of youngsters who run away from this distress by truancy or who leave school at the first opportunity is large.

Social Conflict or Handicap.—Children and adolescents are subject to far more varied and often conflicting social pressures at home, in school, at church, and in their own group than are most adults. Desires stimulated in adolescent groups may be disapproved by church or home, and school-fostered interests derided by companions. The girl who wants to make a high school social group may find herself snubbed because of her father's occupation, her mother's social ineptitude, or her family race or poverty. Such blocking or conflict of desires may have lifelong effects in warped personality; all too often the real cause of the emotional attitude is concealed because of hurt pride.

Vocational Problems and Emotional Distress.—In later adolescence especially, there may be conflicts between the vocational desires of the youth and of the family for him, or handicaps which prevent the following-through of vocational interests. The drawn-out emotional strain of attempting an impossible vocation, then giving up but remaining dissatisfied in some other work, is only too common. But even this may be preferable to the longer stress of pressing on because of family influence to a goal not desired, obtaining a job not wanted, and pursuing uninteresting tasks day after day for a lifetime. A realistic and carefully considered vocational plan, taking sensible account of the individual's abilities, resources, and probable opportunities, is a major contribution to emotional well-being.

One man, now over 40 years old, wanted to be a doctor. He attempted in vain to meet the requirements of several medical schools. His friends tried to discourage him, but to no avail. Even after his marriage and the birth of his first child, he returned to college for one more trial, as a result of painful saving for several years in his teaching position. He was only then finally convinced of the impossibility of this goal. And in spite of this experience he wants his oldest boy to study medicine, although the boy does not desire to do so and does not have sufficient general ability.

Level of Aspiration and Emotional Development.—Very significant in connection with these problems are certain investigations regarding what is known as "level of aspiration." For instance, college students were given certain simple tasks, and before each trial each one was asked to indicate how well he expected to do. The task might be working problems in arithmetic for five minutes; before starting, each student would be asked how many problems he expected to do correctly in that time. Then his level of aspiration was compared with the accomplishment actually attained, and his reaction noted to his success or failure to do as well as he had stated he would do. Some students were overcautious and really did better than they had estimated, some were overambitious or boastful, some appraised themselves well. What a person says he will do, whether he does it or not, and how he reacts to his success or failure—all these features of these apparently simple little experiments may be significant regarding his emotional development.

Thus, one student's prediction was always set lower than his performance. An interview showed that this attitude colored his every action in life situations. He wants very much to go ahead but so fears failure that he systematically sets his goals low (thus "hedging" against failure). Another student who feels that he cannot really attain a certain goal tries to convince himself that he can by loudly declaring that he can. And yet a third sets a high goal and then tells people about it so he will work harder to avoid the shame of failure. In general, a goal too low or too easy causes decreased interest; the individual might stop work on the task entirely. A good success was likely to bring about a higher declared goal for the next trial. Motives might be various and complex. When asked why he tried to do better, one student said that he thought maybe he "wasn't doing as well as others, and therefore wanted to do better." Another student wanted to do better each time "because I didn't want to appear dumb, I guess. But [immediate cover-up] I'm not particularly worried whether people think I'm dumb or not."

Failure usually caused the level of aspiration to go down; only rarely did it stimulate to a still higher level. Often it caused the task to be dropped. Said one student, "Sometimes I get sore, at other times I'm just discouraged. As a general rule, failure does not tend to spur me." Said another boy, "Failure makes me moody. Rather than spur, it probably acts as an anchor. I probably contrive an excuse for the failure. Success, I always think, is my own doing." And another boy said that, after failure, "I bust around the room and want to break everything."

Clearly, the individual's levels of aspiration are a product of his emotional development to date and a major determinant of his emotional reaction to a given experience. Obviously, a major contribution of the school to emotional development can well be an attempt to adjust levels of aspiration to reality as regards ability, socio-economic status, and personality so that emotional development may go forward without undue stress.[9]

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[9] For instance, instead of aspiration to enter a profession, there may be built up an interest in a skilled trade or agriculture in youngsters whose abilities and circumstances best fit them for these latter occupations.

THE PATHOLOGY OF EMOTION

If an individual suffers from continuing strong emotional stress and frustration, various results may follow, depending upon his vitality and ability, his previous habits, and the total situation. These results of continued emotional stress are so common, often have such serious consequences, play so large a part in classroom problems such as discipline, put such serious responsibilities upon the teacher, yet are so often completely misunderstood that they must now be carefully considered.

Emotional Exhaustion.—The first of these results occurs when the individual remains face to face with his difficulty and is worn out by it. The outstanding symptoms are those enumerated above, only in more acute form; the individual is abstracted, inefficient in work, unable to concentrate, irritable, sleeps poorly, is restless, has indigestion, and shows marked and chronic fatigue. This condition is known technically as neurasthenia, and if a general collapse ensues is usually referred to by the popular phrase, "nervous breakdown." Such people have carried an emotional maladjustment until it has exhausted them. They have neither solved their fundamental problem, escaped from it, nor become adjusted to it; they have merely gone on and on living with it until it has overwhelmed them. The nervous breakdown may occur at practically any age but is most common in adolescence and early adult life.

Some years ago one of the writers knew a girl who became a neurasthenic invalid. She was an only child. Her mother died when the girl was born, and the child was "brought up" by her father, of whom she was very fond. She was physically not vigorous and had a quiet and retiring disposition. During her first year in high school her father married a woman who had a daughter also in the first year of high school. The stepsister was a bright, vivacious, attractive person who soon overshadowed the other girl socially and academically. The girl's father was so in love with his new wife that he did not sense his daughter's difficulty, and she felt that she had lost her previous close companionship with him. The situation both at home and at school became unbearable. Her work went to pieces, she lost appetite, slept only irregularly, began to complain of headache, backache, indigestion, eyestrain, and attacks of dizziness and faintness. Eventually she took to her bed, where she stayed most of the time for over a year. There was no evidence of physical disease, although her physical condition was not good. But the emotional invalidism did have these two advantages: it kept her away from the situations where she could not successfully compete, and it brought her (as an ill person) more attention from the family than she could otherwise obtain. She could not really solve her problem and was continually hurt and exhausted by it; she stayed in the place where it was most acute—her home.

The neurasthenic is finally worn out because he neither solves his emotional problem nor finds any emotional relief. Other individuals, although failing to solve their difficulties, manage nevertheless to avoid them in some degree. Such pseudo-solutions will next be discussed.

Escapes and Pseudo-Solutions.—Perhaps the most obvious thing a person can do when faced by an unpleasant situation is to run away from it. Sometimes the escape is actual—the child leaves school, the man resigns his job, the wife leaves her husband, the mother abandons her illegitimate child, and the adolescent joins the Army or Navy as an escape from home supervision or a disastrous love affair.

A man obtained a good position as chief clerk in a business office. It was soon apparent that he could not get along with his office force. Actually his failure to control the situation boiled down to the two facts that he did not give adequate directions for what he wanted done and that when annoyed by an error he shouted at the offender, making a public display of what could have been settled quietly. His subordinates were generally efficient workers, and they resented having the mistakes made through inadequate guidance aired so conspicuously. The man sensed the attitude of hostility readily enough, worried about his failure, was unable to sleep, lost his appetite, and became more crotchety than ever. One day he did not come to work. Inquiry revealed that he had left town during the night. He is now living on the family homestead in the country, his defects not only unremedied but intensified by the bitterness of failure.

His difficulties might have been dealt with rather easily, for he needed to give more adequate directions and to speak quietly. But instead of analyzing his troubles and solving them, he ran away from the entire situation and wrecked his whole future career. Such "escapists" are more common than most people realize.

Some individuals cannot or will not run away, in the sense of actual flight to a new locality. However, they may still escape almost as completely by other behavior. Perhaps the most common type of compensatory reaction is daydreaming. To be sure, everyone daydreams a bit, because everyone meets obstacles to the carrying-out of his desires. If the desires are not especially vital or the daydreams not so habitual that they interfere with the youngster's real work and play, such imaginings give some emotional relief and no harm is done. The trouble comes when a child settles back to habitual daydreaming instead of trying to "make good" in his work or play. Such a condition may arise when a youngster who is not very aggressive or sure of himself is faced day after day with a total situation that seems utterly unsolvable. He cannot run away permanently, although he may make the attempt. Since he is not vigorous or assertive, outbursts of indignation and resentment are not likely to occur; but a retreat from the whole unbearable situation is both possible and comfortable—he can simply not notice what is going on around him but substitute daydreams in which he plays with imaginary companions, is liked by them, dominates them, and can do as he wishes. If the maladjustment to child society, schoolroom, or home continues long enough, he will build up a habit of running away from reality, and probably, in later crises of his life, he will again resort to fantasies instead of trying to meet and solve his problems. While it brings temporary relief, habitual daydreaming is an escape mechanism that leaves the individual without any real, lasting solution.

If such symptoms as have been described are indulged in long enough, the individual concerned may develop dementia praecox, may become insane. The essential characteristics of this disease are a complete withdrawal from reality and a concentration upon a world of fantasy. Such a person has so entirely substituted his fantasies for the actual happenings of the world that he no longer distinguishes his daydreams from reality. As implied by the name, dementia praecox starts relatively early, usually during the years of adolescence. It thus presents a very serious problem. Case histories of dementia praecox almost invariably show that the beginning can be traced back to odd behavior long before the child completed his schooling. Parents rarely appreciate the danger in the early stages of this condition; unless the teacher does, no preventive steps are likely to be taken.

The unhappy, socially isolated youngster who finds relief in reverie is a rather common problem in the schoolroom but is often overlooked because he is so quiet and well behaved. For instance, one girl moved from the country and went to a large city high school. There her somewhat boisterous, unsophisticated efforts at friendliness were met with rebuff. She was at first hurt and bewildered, then irritable and defiant. Her classwork slumped badly. But gradually she seemed to become reconciled to the situation, and would sit for a period of time apparently deep in thought, occasionally smiling to herself. A little later she dropped out of school. She tried to hold a job but was too abstracted and absent-minded to be employable. Gradually she lost contact more and more with the real world, and lived completely in her imagination. She sat for hours apparently in a daze, smiling oddly from time to time, developed queer mannerisms which appeared to be related to her imaginary experiences, and occasionally became suddenly excited or exhausted, apparently without reason. In the end she had to be sent to a hospital for the insane.

These extreme cases are not common; but the possibility of this outcome should make the teacher consider carefully any pupils who show such symptoms. The final collapse rarely comes while the individual is in school. However, the teacher should realize that the disease has its start in the conditions of frustration and withdrawal into an imaginary world described above, and she should appreciate the school's responsibility for getting such youngsters back into a normal existence before their isolation is so complete that nothing can be done.

Other less complete retreats from reality are shown by those who find emotional satisfaction through the movies, reading sentimental stories, or in a highly emotionalized religion. Some people lose themselves so completely for a time that the movie or story becomes reality for them, and they themselves live the scenes in imagination. Often the incidents of the story are embroidered by the reader with brief daydreams. In any event, he becomes identified emotionally with the characters of the play or story, and is oblivious to reality. It should also be mentioned that the type of reading matter often reveals the nature of the unsatisfied longings. The physically weak boy not only dreams of being an athletic hero but also reads fiction or sees movies of heroic events. The homely and unpopular girl dreams of being popular and sought after, and finds a wistful pleasure in romance and in stories of girls who were happy in their home and school lives. The compensatory nature of these activities is obvious.

Rationalizations.—Thus far, two common and unfortunate results that may be brought about by a persistent "obstacle situation" have been presented. The person may struggle along until he is worn out, or he may avoid the problem either by running away from it or by retiring into a false world of imagination. The third inadequate reaction which the individual may make is this: he may falsify the situation to himself so as to minimize the problem.

Extremely common are certain mental mechanisms called "rationalization," "projection," and the "sour grapes" type of response. Suppose, for instance, that a boy wants to belong to a certain gang but is for some reason unacceptable to them. He is constantly faced by the exceedingly uncomfortable fact of social rejection by a desired group. Suppose further that he is too vigorous to become exhausted or admit he is licked, and that he either finds no compensation in daydreams and reading or else does not happen upon that particular form of escape. He may "rationalize" his failure by saying that his parents do not wish him to play with the gang because it is composed of undesirable boys. If he is successful in this rationalization, he no longer feels the unpleasantness to the same degree. Or he may project the blame for his exclusion on some boy in the gang, saying that this boy has always disliked him without reason. Having done this, he becomes much more comfortable. Projection is, in essence, merely a particular form of rationalizing in which the individual shifts the burden of his own maladjustment to someone else. Again, he may explain to anyone who will listen that the gang is not really worth belonging to—after the fashion of the fox in the fable who could not reach the grapes he wanted and so said they were sour and not worth reaching. This is another form of rationalizing an unbearable situation so that it becomes more tolerable.

If the reader wishes to observe these mechanisms in action, he or she should talk with students who have desired beyond all else to join a fraternity or sorority and have not been asked to do so. These students may wear themselves out with their distress over the situation, they may leave college, they may use some form of rationalization, or they may go on at great length, upon all possible occasions, about the pernicious character of secret organizations. Or there may be still other reactions, to be described next, to the situation.

Overcompensation.—Overcompensation, another reaction to frustration, is the result of feelings of inferiority. However, it takes a quite opposite form from that shown by nervous breakdown and exhaustion, for the individual seems to take on an excess of self-confidence and desperately starts out to make himself appear adequate when he really is not. He pushes himself ahead and into everything, brags about his achievements, is generally obnoxious, is usually resistive to discipline, and tries constantly to "show off." But a little close observation will usually show the condition for what it really is. The bewildered and unhappy youngster is frantically trying to conceal his difficulties and to bluff through, somehow, the situations with which he is having trouble. Sometimes such extroverts succeed and emerge with a real adjustment and a truly self-confident personality. Sometimes, their bluff called, they collapse utterly, with courage gone and spirit broken. The boy in the illustration below was able, because of good native ability and the considerable assistance given him, to achieve a partial adjustment; his case demonstrates the type of symptoms that appear in the schoolroom.

William Nelson came to the university from the farm. His education had been gained in a small township high school and before that in a one-room country school. His whole manner, dress, and speech showed the sort of background he had. Upon entering the university he went into pre-medical work and was getting along fairly well when he was sent to one of the writers because of personal difficulties with his instructors and with the assistants in his laboratory courses. They reported that this boy was often extremely conceited, that he talked back to the teachers in an aggressive manner, that he domineered over the other students in such a way as to irritate them, that he talked continually about his cleverness, and generally conducted himself in a manner that was most unpleasant to those about him.

He appeared for his interviews dressed in "noisy" clothes, talked in a loud and familiar manner, and in general seemed to be trying to give the impression that he was a sophisticated and very self-sufficient collegian. The picture presented by this student is familiar to those who deal with problems of emotional maladjustment. He had as the basis of his trouble the much-talked-of "inferiority complex" which is common among students who come from small places and find themselves unprepared to compete socially with most of the students at the university. This boy's grammar and dress immediately gave him away as a farmer, and he therefore adopted an extreme manner and clothes to overcompensate for the inferiority which he actually felt. His impertinence and his talking back to his instructors were to be thought of primarily as efforts to appear to them a competent individual who could handle any situation with a debonair and confident manner. His occasional efforts to domineer over his associates were, similarly, frantic efforts to assert his adequacy and thus conceal his inadequacies from both them and himself.

It is evidently vital that the teacher should understand these conditions for what they are and help the youngster to a real adjustment, instead of adding to his already intolerable burden by well-intentioned but ill-timed disciplinary measures which, at the very best, can serve only to eliminate certain symptoms and can never solve the underlying situation.

Hysteroid Reactions to Emotional Distress.—There remains one other relatively common but odd and hard-to-understand reaction which children may make when frustrated and in emotional distress. Some peculiar, inadequate response may be hit upon and used because, for the time being, it seems to work—or at least to give some release to the stress.

A dull third-grade boy, who was failing in school, chronically scolded by his teacher, and looked down upon by the other children, one afternoon vomited his lunch—partly because of indigestion and partly because of emotional distress from a scolding. To his utter astonishment, his illness caused sympathy from teacher and children, and he was for the first time in his life the center of attention. Thereafter, whenever he was scolded or his desires were blocked in any way, he would vomit. In another case, a little girl had been told some smutty stories that had greatly disturbed her, especially because she was assured, on what she considered undebatable authority, that her adored mother and father had indulged in the practice so lewdly described to her. She could not reconcile what she had heard with her previous estimate of her parents' moral infallibility. The conflict continued to disturb her, causing general restlessness, careless schoolwork, and sexual fantasies. Finally she struck out at her problem and discomfort by stealing a sum of money from the cash register in her father's store. This act seemed, by some obscure reasoning, to bring relief. Of course it solved the situation only temporarily, and her vexation soon returned. Presently she again stole because it made her "feel better"; inasmuch as she never made any use of what she stole, this explanation seems likely. Several of her thefts followed directly after she received more sex information from an older child, thus precipitating the fundamental problem once again.

These special devices for getting attention or one's own way range all the way from the small child's simple tantrums to almost unbelievably bizarre, hysterical episodes. But they all have this in common: they originate in frustration and emotional distress and are devices for relieving that distress and achieving in some form the frustrated desire. In handling such cases, therefore, it is exceedingly important that one should seek the cause and not merely the symptoms. Obviously, to expose the girl for her unconscious subterfuge or punish the boy for his gastric gymnastics might or might not suppress the particular symptoms in question; it would only increase the emotional distress, and almost inevitably other similar devices would soon appear.

In both cases, the hysterical symptoms disappeared after their cause was understood but, unfortunately, not until after both teachers and parents had punished the children severely. There is usually nothing more senseless than punishing a hysteric. For the boy, the treatment consisted in his removal into a class where he could progress and where he was as capable and acceptable as the other children. During the period of his readjustment any vomiting was disregarded as far as possible. When he could gain normal attention and satisfactions in other ways, his vomiting ceased. The girl was quietly talked with until her deep conviction as to the nastiness of sex relations had been replaced by an attitude of understanding. The stealing has since disappeared. Both children are at the moment free from their previous troubles, but their freedom may not continue. The dull boy will undoubtedly meet with failure again, and the girl will probably find heterosexual adjustment and marriage difficult. Both children have already set up hysterical modes of response, and these reactions have been ground in by punishment, reproof, and misunderstanding. It is possible that in another crisis these or other hysterical actions will be resorted to.

These two examples illustrate a number of points in regard to the hysterical type of response. The response is often irrelevant to the stimulus and, indeed, is in many cases a veritable accident. It is almost always dramatic, explosive, and attention-getting. It often turns the situation from something distressing to something pleasurable by the simple expedient of playing on the sympathy of others. It offers a temporary dishonest solution of the underlying problem which, however, remains virtually untouched and in readiness to set off another explosion in the near future.

Stammering and Other Incoordinations.—Among the unfortunate effects of prolonged emotional stress is stammering. A few unfortunate children thus afflicted have actual anatomical defects or dysfunctioning at the basis of their difficulty, but most stammerers have no physical handicaps; the entire cause is emotional distress. Nothing shows this more clearly than the fact that the stammerer usually has trouble only in certain situations. When he feels relaxed and comfortable he speaks normally, but he stammers when embarrassed or excited. School obviously involves numerous opportunities for embarrassment to a stammerer, and he is therefore likely to grow worse as his schooling continues. Most cases largely clear up early in adulthood after the stresses of adolescence and schooling are past—leaving, however, unfortunate residues of shyness and reticence.

The child with a speech defect is almost always ridiculed and made fun of, at least by the other children if not by the teacher. It is therefore to be expected that a stammerer will develop various secondary emotional attitudes, such as shyness or irritability. The teacher should always be on the lookout for children who are beginning to show a speech defect or already have one. In only rare instances is there anything wrong with the speech mechanism; usually the difficulty is wholly emotional. As one expert has said, "Stammerers can always sing, swear, and soliloquize." Fluent speech under some circumstances and a stammer under others make it clear that the defect is not physiological.

Instead of or in addition to stammering there may be other incoordinations such as tics, peculiarities of movement or posture, or clumsiness. Again there may be a physical basis; thus the tic or clumsiness may be a residual of chorea. But more often the cause is emotional.

Belligerency.—A person who is too vigorous to admit defeat, too pugnacious to run away, too clear-headed to fool himself by pseudo-solutions may fight back at a world that is so uncomfortable. Naturally, this type of behavior leads to acute and stubborn problems of discipline in the school or at home.

Illustrative is a high school boy who had almost terrorized his companions and teachers. This lad's father was in the penitentiary—unjustly, according to the boy. For a time after the commitment the boy remained in a somewhat dazed condition, was publicly humiliated by comments from the other children, and ignored when invitations for social gatherings were being issued. Presently, however, he began fighting back. He knocked down anyone who twitted him about his father; when a little girl ignored him he twisted her arm until he had forced her to kneel and apologize; he threw rocks, with deadly aim and intent, at others. Sometimes his cruelties were practiced on children too young to resist, presumably because he could get release from his emotional strain in proportion to the pain he inflicted. Gradually his bellicose attitude spread to adult society. On one occasion he tinkered with the brakes on a teacher's car so that they would not hold; the teacher was nearly killed. At another time he entered a neighbor's house and fixed a heavy weight over the front door; when the woman of the house returned from market the weight fell on her head and stunned her. Twice he set fire to valuable property. This blind striking-back at society was his method of response to intolerable humiliation.

Aggression may manifest itself in various ways. Most obvious is aggression against the cause of the frustration—the adolescent is angry at the parent who objects to his late hours and other efforts at escape from childhood restraints. But there may be displacement. Thus a brilliant college girl had all her life been dominated by her brilliant and very dominating mother. She admired her parent too much to rebel but became a great espouser of causes to aid the oppressed, her latest episode being leadership of a student strike against a faculty rule. The aggression may be turned toward a scapegoat. For example, a teacher in difficulty with her principal developed a strong antipathy toward one of the most capable boys in her room. Aggression toward the principal was hardly safe, but this boy seemed to have become a symbol of her instructional trouble and she vented her irritations on him.

Clearly, aggression is almost always difficult to deal with, and belligerency such as was illustrated by the delinquent boy may become very dangerous.[10] How should one deal with such cases? To try to stop aggression due to frustration by attempting to frustrate the aggression would seem to run the risk of compounding the psychological pressure. Yet this is the first impulse. These aggressive cases are often frustrating to the teacher's efforts to carry on the schoolwork as she had planned; a mounting aggressiveness on both sides is the result. Others are drawn into the situation; there are punishments and recriminations, and lifelong personality trends may thus be established. Many criminals seem to have such a background. Evidently early calm understanding of the real situation and alleviation of the frustrations or a finding of substitute responses by which the individual can make good are here especially important.

Efforts were made to help the belligerent boy described above. Other pupils were asked to be considerate of him and accept him. He was helped to make good in athletics. His escapades were disposed of out of court, and one teacher who understood him had many friendly talks with him. But unfortunately things had gone too far; most of the other students and teachers, and the boy himself, were all too bitter to permit reconciliations. He was helped just enough to keep him out of trouble and show him how to get by, and he came to take pride in his ability thus to get along. After leaving school he became notorious as a man who engaged in shady business practices and with whom the law never quite caught up.

The strikeleader was talked with in considerate fashion by a teacher who knew her very well, and when she had calmed down a bit she was asked quizzically if her difficulties with her mother might not have something to do with her crusading zeal. After a moment of spluttering protest she laughed and admitted that it might be so. The strike was soon cleared up. But the girl is chronically an agitator and leader of causes. And in all fairness it should be added that often the cause is good and she renders a real service. As mentioned earlier, many famous people seem to have obtained their drive from psychological backgrounds such as have been described above. Benjamin Franklin remarks in his autobiography that his lifelong desire for liberty may have had its origin in his boyhood resentment at the domination of an older brother.

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[10] Hitler and Mussolini may well be considered cases of long-continued frustration producing exceptional aggressiveness. Social groups like the Ku Klux Klan may be formed of frustrated elements in a society and operate in fashions described above. Even whole nations, like Germany, may become frustrated, then aggressive, turn on a racial scapegoat, and strike out savagely in all directions. For an interesting discussion of such matters, see (18).

Factors Determining Mode of Response to Emotional Strain.—Why one person reacts in one way to persistent emotional strain and another person reacts in very different fashion, while a third seems hardly affected at all, is often not clear. It is generally recognized that individuals suffering from illness, fatigue, or lack of sleep are especially subject to emotional upset. Differences in physical vigor might affect mode of response, physically strong individuals tending more toward belligerency and the physically weaker to escape or exhaustion. Stage of physical development is almost certainly important. One investigator found a correlation of .94 between aggressiveness in boys and evidence of onset of puberty.[11]

Social and cultural factors are also important. Thus aggression is a more approved reaction for boys than girls. A repressed New Englander seems more likely to become neurasthenic than a Southerner. A person from a lower social class is perhaps more likely to overcompensate. The family "culture pattern" is undoubtedly very important. The reader probably knows some families in which children rarely cry when hurt and other families in which crying or hysterical outbursts are the expected form of response to any difficulty. But within each family there may be great differences in reaction to emotional strain. Presumably each individual's response to stress must be understood in terms of his total personality and development.

The Frequency of Emotional Distress.—It remains to emphasize that emotional distress of a considerable degree is by no means rare. In fact, it might well be called the more usual thing, somewhat as most individuals have some physical handicap. A very careful and intensive study of the emotional life of a group of college students, selected more or less at random, showed that 68 per cent had either a past or present persistent inferiority feeling. One-third had experienced rejection in childhood. One-third had had a marked guilt reaction. A concluding paragraph of the study may well be quoted:

"Most of our subjects were carrying . . . a heavy load of crippling anxiety, inferiority feelings, guilt feelings or dejection. Many of them, of course, were troubled by thoughts of financial insecurity, but the majority were more concerned about their general social status. They doubted that they could live up to their own standards or to the expectations of their parents. Frequently, they suffered from memories of stinging humiliations, and when they went to their books in the evening, overriding apprehensive thoughts of future failure or depressing feelings of separateness and forsakenness prevented concentration. A basic sense of insupport aggravated by dissensions with one or both parents was a frequent finding. This was commonly accompanied by moral conflict." [12]

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[11] Sollenberger, quoted in (18), p. 103.

In fact, most people, knowing little of other folks' emotional distresses, overestimate their own. It is a sorry but perhaps helpful thought that probably one's own troubles are not so unique or so great as, lacking that perspective, is likely to be assumed. Increased considerateness for others and a gain in one's own comparative self-confidence may well result. The need for much more helpful consideration of these so frequent and so distressing problems in school is also emphasized by all these facts.

"The patterns of affective behavior shown by children are certainly as important as their number knowledge, eye-movement habits, and language skills; yet they are widely ignored by school people. Tantrums, daydreaming, fighting, shyness, teasing and bullying, bidding for the attention and approbation of the teacher, masturbation, impertinence, and a host of other ways of behaving are the patterns by which pupils try to relieve tensions or work out their personality needs. To recognize these behavior patterns for what they are, to understand their causes, to know the manner in which they were learned, to find more mature ways of behaving appropriate to the particular child and to evoke that mature behavior—these are not easy tasks for school people." [13]

THE DIAGNOSIS OF DISCIPLINARY PROBLEMS

Chronic or severe conditions of emotional strain have thus far been emphasized because in a young person's development these are far more important than the occasional outburst of talking back, uncontrollable laughter, fighting, swearing, or crying, and because, being more extreme and persistent, they show more clearly the important phenomena involved. Furthermore, the discussion was not restricted to emotional problems as they appear in the school, because it is vital that emotional distress be understood as a whole, with reference to the child's total existence. With this background, the question now arises as to what understanding may be obtained concerning episodes of conflict in the school. Since disciplinary problems are usually reported as the most difficult with which the young teacher has to deal, insight into such problems should be of great value.

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[12] From H. A. Murray and others, *Explorations in Personality,* Oxford University Press, p. 730. By permission of the author and the publishers.

A further finding of this investigation may be mentioned. An emotional stress may be determinative in life plan. Thus a student who stuttered chose philology as his major field, and another, who had a frequent fantasy regarding the death of his parents in an automobile accident, became a salesman of automobile insurance and consequently had frequently to go to the scene of accidents.

[13] Prescott, *Emotion and the Educative Process,* American Council on Education, p. 202.

Chronic Emotional Distress and Disciplinary Problems.—First to be considered are situations in which the chronic emotional conditions discussed in the preceding section may cause disciplinary crises. Belligerency and overcompensation are almost bound to bring episodes of classroom conflict. The rationalizing pupils who are always blaming someone or something else are usually irritating to both the other pupils and the teacher. Hysteroid behavior is likely to be both disturbing and puzzling. The daydreamer and the neurasthenic usually present no classroom police problems, except as the first type may resent the teacher's efforts to break in upon his reverie, or an unsympathetic teacher may push a neurasthenic so far beyond his strength that he becomes desperate (that they especially need her help has already been stressed). In view of all that has been said in the preceding two sections, it should not be necessary to elaborate further upon the extent to which children suffering from persistent problems of emotional distress may present persistent problems of classroom management. If a teacher will locate and carefully study such cases, she will be on the way to a solution of her most baffling disciplinary problems. A pupil not emotionally "sick" may nevertheless present disciplinary difficulties. These cases must next be considered.

Disciplinary Problems Due to Conflict with an Unsuitable School Program.—The most common difficulties of this sort come from the reaction of healthy children against an unsuitable school routine or program of work. Significantly, such difficulties are more common in a conventional school than in schools of a more progressive type, for in the conventional school the pupils are expected to be quiet and not to move about or *do* things. But healthy children are active and restless and find being still for any length of time almost intolerable. Inevitably, in a conventional school, healthy youngsters come in conflict with its methods and with the "drillmaster" teacher.

Furthermore, as is emphasized again and again throughout this volume, school-age youngsters are highly social. But the conventional school has a routine which is anti-social. Conversation between children is forbidden, and for children to help each other is considered wrong—it is each child for himself. Inevitably the friendly, sociable child finds himself in conflict with the perverse moral code of the classroom.

Moreover, the curricula of the average school are all too often out of contact with the pupils' interests. The youngster in the manual training class who would like to make a model plane is required to make a whisk-broom holder. The girls who would enjoy, and who should be helped to a discriminating acquaintance with, good modern literature are required to read Shakespeare or George Eliot and write character studies of Lady Macbeth. Modern-minded youngsters who would read avidly about current events must consider instead the state of the Roman Empire under Augustus or study the weary details of the Hundred Years' War. Millions of children still plod wearily and resentfully through the intricacies of Latin grammar. Little wonder that an alert and questioning younger generation, hungry for knowledge about the manifold problems of the modern world, should be chronically rebellious against the inanities still present in the average high school course of study. And the teacher who must force such a program upon her pupils must expect to have continuing difficulties of discipline in holding her charges to these tasks.

Finally, in the average school there are numerous instances of maladjustment between work and ability. It has been reiterated that success experiences are essential for healthy mental hygiene. The boy in the algebra class who cannot learn algebra is a frustrated, unhappy, resentful youngster who is almost certain to cause the teacher trouble. The daughter of the local grocer who is being made to wade through *Hamlet,* though without the slightest understanding, is more than likely to pass notes or whisper to her neighbor. The highly intelligent girl in the first-year class who can read French better than the average third-year pupil is almost certain to show periods of inattention which are irritating to her teacher.

In the conventional school, then, there are many conflicts between pupil and teacher which are the fault of the school, not the pupil. It may almost be said that the more healthy and intelligent the pupil, the more frequent the conflict. The teacher therefore will do well, if minor disciplinary problems are frequent in her room, to consider whether such factors may be the real cause. To be sure, she is largely helpless to remedy certain of the faults above mentioned, as in the course of study. Yet if she understands the situation she will at least be more tolerant, and perhaps, on some curriculum committee, she can do her bit toward making things better. In numerous little ways she can do much to bring the work into more vital contact with the needs and interests of her class.

The Analysis of the Specific Disciplinary Episode.—The above discussion has been general. Actually, any real disciplinary episode is a concrete, specific affair, born of a variety of obscure influences which may include all the factors mentioned above. A consideration of the following episodes should make this clearer.

In a certain school Miss A was one day asked to take over a group of tenth-grade youngsters who were completely out of control of the young teacher who had been in charge. The class had started on its downfall in a curious fashion. In the middle of the room there were two small columns that supported the ceiling. One chronically failing boy whose seat was behind a column evidently became exasperated and proceeded to "shinny up" the annoying post. The inexperienced teacher unwisely shouted at him and he, being well out of reach, proffered some replies. In a few moments another lad had climbed the second column. Someone suggested a race between the climbers; in a moment there was a group at the foot of each post, thus preventing the teacher from laying hands on either boy, and an elimination tournament was in progress. The teacher shouted, scolded, and even cried, all to no avail.

At this point Miss A entered the room, reassuringly sent the younger woman to the teachers' rest room to regain her composure, then calmly sat down at the desk and began correcting themes. Not the slightest attention did she pay to the students, who presently discovered that climbing dusty posts was not much fun. When the groups had dispersed of their own accord, Miss A took a hand. First she asked the two boys who started the trouble what had ailed them. They replied that the posts were a nuisance. She then asked if there were not some more sensible solution than climbing them. In a few minutes the class was at work moving the desks around the room until difficulties of seeing and hearing were reduced to a minimum. By this time the school day was at an end.

On the following morning Miss A entered the room to find a couple of lads climbing the posts again, but she simply smiled at them and went on with the interesting lesson she had prepared. Soon they went back to their seats. The childish boy who had started the trouble returned to his gymnastics two or three times, but Miss A paid no attention. By the next day his antics began to be greeted by adverse comment from the other pupils. Miss A smiled to herself and knew the crisis was over.

In this case, the outburst was clearly a reaction of irritation, on the part of a failing boy, against the chronic handicap of having the post in the way; and this reaction was elaborated and continued because the lad found that it made him the center of attention and interest and hence was in delightful contrast to the legitimate class activities in which he could never make good. The class gleefully aided and abetted him because the episode gave them welcome opportunity to shake free for a few minutes from a conventional school routine and get up, move about, talk. The incident was successfully handled by eliminating the immediate cause (the seat behind the post) and by bringing it about that the proscribed activity (post-climbing) brought social disapproval rather than applause.

In another instance a bright, nervous, high-strung third-grade child refused point-blank to read aloud a simple story about animals that talked, because she regarded it as silly. The order was repeated, the stubbornness increased, and the exasperated young teacher told the child she could not leave school until she had read the story aloud. At five o'clock the deadlock was broken by the principal, who required merely that the girl read a passage from any book, whereupon the youngster proudly pulled from her desk a copy of *David Copperfield* and read a passage with gusto. Once again the underlying causes of the trouble were multiple and of long standing. In the first place, the child was not well. The work was far below the level of her interests and her ability; the episode was the climax of an accumulated exasperation at work which she considered beneath her. And she craved the satisfaction of showing what difficult material she could and ordinarily did read.

In the background of all these episodes one sees a gathering rebellion against a series of stupidities on the part of the school. To be sure, the school is not always wrong! The moral is that one should stop and study a situation before acting. The reader should recall disciplinary episodes he has observed and attempt to analyze them in similar fashion. Obviously, such episodes can never be understood without understanding the children involved, and the social situation. Even where the fault is the pupil's, analysis is still needed if the treatment is to be effective.

The Teacher's Attitude as a Cause of Emotional Stress and Disciplinary Difficulty.—Very often indeed, a teacher's attitude toward her pupils arouses in them feelings productive of disciplinary problems. Significant here is Table 21, which shows the teacher characteristics best- and least-liked by high school students.

TABLE 21.—Four Most Frequently Mentioned Characteristics of Best-Liked and Least-Liked Teachers, as Reported by 3725 High School Seniors [14]

Best-Liked Teacher	Mentions
Helpful with schoolwork, explains lessons clearly	1950
Cheerful, jolly, can take a joke	1429
Human, friendly, companionable, "one of us"	1024
Interested in and understands pupils	1024
Least-Liked Teacher	
Cross, crabby, nagging, sarcastic, loses temper	1708
Not helpful with schoolwork, work not planned	1025
Has favored students and "picks" on others	859
Haughty, overbearing, does not know you out of class	775

Clearly the teacher who loses her temper, has favorites, and is overbearing is likely to stir up resentful emotion in her students and to have disciplinary clashes.

THE HANDLING OF PROBLEMS OF EMOTIONAL DEVELOPMENT

It remains to bring together the implications pervading this chapter regarding the handling of problems of emotional frustration and fulfillment. The following suggestions appear of most importance.

The Importance of Going Back of Symptoms to the Underlying Situation.—It is first of all fundamental to recognize the inadequacy of simply treating symptoms without consideration of the underlying situation and the possible effect of the treatment upon it. The pupil who is belligerent, morose, daydreaming, or truant is not adequately dealt with if punished for his aggression, berated for his moodiness, rudely interrupted in his "wool-gathering," or pursued by the attendance officer; instead, the treatment may in each instance aggravate the basic difficulty. The important questions are: What frustration or confusion is causing the aggressiveness or moodiness or the real or imaginary flight from the schoolroom? How may that situation be cleared up? Can a reasonable satisfaction of the frustrated interests be somehow secured? Or may the interests need reconstitution, and the level of aspiration need to be changed? These problems, not the symptoms, require attention.

Where there is not frustration but furtherance, the background situation must nevertheless be considered. Mabel seems particularly interested in history and is doing notably well, but a crush on the history teacher turns out to be the key factor in the situation. Ruth writes so well that her delighted English teacher hints at a possible career as an author, but Ruth is a shy little girl whose interest in literature is almost as unhealthy a substitute for real experience as daydreaming. Bill's long hours and beautiful work in the industrial arts shop are in part an escape from and compensation for his poor work in his other subjects. Mary's interest in preparing to teach turns out to be more her mother's interest in having her do so; Mary's good work in normal school is motivated by her loyalty to her parent, not her eagerness for her prospective profession. John's enthusiastic good work in mathematics is really enthusiasm at beating Algernon, son of the community's toplofty social leader. Whatever the nature of the emotional experience, if the background situation is not considered, the teacher may make some sad or even ridiculous mistakes.

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[14] Adapted from F. W. Hart, *Teachers and Teaching*, Macmillan, 1934, as quoted in (49), pp. 273–274.

The puzzled mathematics teacher found that when Algernon dropped out of the class John's work slumped badly. Ruth's interest in literature evaporated after she acquired a boy friend. When Mabel's crush came to its inevitable disillusionment, she "hated" history.

The Importance of the Teacher's Being "Objective" and Having Insight Regarding Possible Involvement of Her Own Emotions.—In the second place it is of prime importance that a teacher should not let her own emotions become so involved in her relations with her pupils that she acts to satisfy her own feelings rather than their needs. A pupil's inattention, stubbornness, or insolence naturally arouses irritation and countering aggressive responses in the teacher, and to indulge her own feelings by sarcastic remarks and yet other aggressive responses is a release and satisfaction to her. But it usually only adds to the tension. Instead of reacting subjectively in terms of her own feelings, she should maintain an objective attitude of calm, friendly openmindedness and desire to understand what the trouble really is. Often nothing more is needed to handle a disciplinary situation than easy good nature and refusal to take a bit of excitement seriously.

All that the experienced teacher did in dealing with the post-climbing boys was to maintain an easy placidity that calmed the class and made it evident that she could not be "razzed" into making a Roman holiday for them. On another occasion in her own class, a boy put his feet on his desk, the while watching her covertly. The young teacher would have been irritated or hurt and ordered the feet down. But this experienced teacher, wise in such matters, seemed to have a blind spot for those feet. After a while the lad put them down. Then she thanked him for doing so, but went on to explain blandly that if he simply could not work in any other posture she would certainly not let the conventions of the classroom interfere with his education. The feet remained off the desk for the remainder of the semester.

"Objectivity" means further that the teacher will not be shocked or upset by various types of distressing information which may come to her. For instance, a desperate youngster may blurt out to her a story of some sex episode which seems to her very disgusting. But she must not show that feeling, any more than a physician should show disgust when he sees a sick person. Nor should she go into a dither of sympathy for the unhappy youth, any more than a physician should exhaust his feelings in sympathy for his patient. An important contribution of a good physician is his calm unemotionalized cheerfulness in the sickroom—the implication he gives that things after all are not so bad as the patient thinks, that many people have been ill before and recovered, that one shouldn't worry, that if the patient will only keep calm and follow the doctor's directions everything will be better before long. Similarly the distraught young person needs calm reassurance, understanding of his problem, and common-sense suggestions as to what he should do. The well-informed teacher will know that various episodes and habits not uncommon among children are not so abnormal as was once supposed.[15] She will not be prudish or moralistic; she may give directly, or in suggested reading, information which will be helpful; she will have helpful suggestions or suggest where they may be obtained (perhaps from physician, nurse, or psychologist).

Very important but little mentioned is the fact that a teacher should be objective and on guard as to possible involvement of her own emotions in connection with her pupils' likes and accomplishments as well as their antagonisms and wrongdoings. Mabel's interest in history (mentioned in the preceding section) was at first greatly encouraged by her teacher in large part because this teacher much enjoyed the girl's admiring attentions. The English teacher encouraged Ruth's ideas of becoming an author and helped her obtain publication of a story in the local paper, because it added to the teacher's own self-feeling and reputation as the one who had discovered and developed this girl's "unusual talents." The mathematics teacher did not like Algernon much better than John did, and encouraged John in part for that reason. In fact, probably most of the time, the average teacher, being human, deals with her pupils' emotional problems on the basis of her own feelings rather than theirs.

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[15] Well worth reading in this connection is Hugh de Selincourt's remarkable story *One Little Boy* (Boni, 1924, 266 pp.). Good general discussion of such problems will be found in P. M. Blanchard and C. Manasses, *New Girls for Old* (Macaulay, 1930, 281 pp.); Dorothy D. Bromley and Florence Britten, *Youth and Sex* (Harper, 1938, 303 pp.), J. K. Folsom (ed.), *A Plan for Marriage* (Harper, 1938, 299 pp.), and Butterfield (15).

Deep-seated and long-established attitudes present especially difficult problems here. Two teachers in the same school, who may be called Miss Wright and Miss Frank, had both come from very strict homes. Miss Wright was a repressed sensitive woman who was so shocked and upset by student delinquency as to be worse than useless in dealing with such cases. But she did much to encourage and help shy sensitive girls such as she had been. Miss Frank was a big hearty rebel who was impatient with sensitive people but rather admired pupils with "spunk" even when they got into trouble. Pupils who liked one of these teachers usually disliked the other. As faculty adviser, each was good (in fact, sometimes *too* sympathetic) in dealing with the emotional problems of some pupils but only stirred up trouble in contacts with others. In assigning students to advisers the shrewd principal kept these facts in mind, and the two teachers nicely supplemented each other, each handling especially well youngsters the other disliked.

The teacher's as well as the pupil's emotions are thus involved in most emotional problems arising in school—and to keep thinking straight is indeed a task for all concerned. Perhaps the greatest single help in this matter (beyond understanding it) is a sense of humor. If a teacher can laugh at herself—and laugh with but not at the pupils—in considering these problems, then tensions are released and perspectives gained.

The Importance of a Developmental Rather Than a "Police" Point of View, and of Fostering Desirable Emotional Experience.—All too often administrators (and visiting parents) consider a teacher capable in proportion as she keeps order. And the teacher approves those pupils who never upset the order in her room, but extends herself especially to restrain those lively youngsters who "disturb the peace." This is a police point of view.

However, if a vigorous outgoing development of each child is considered the main objective of education, criteria for judging both teacher and pupil will be very different indeed. The quiet repressed child will be regarded as a problem—and also the repressive teacher who tends to make children so. The good teacher will be recognized as one in whose room the pupils feel so secure and unrepressed that legitimate activities can be undertaken without hesitation. She will try to free them of frustrations, fears, and resentments, and resolve any impasse causing unpleasant emotion.

But she should do more; she should foster desirable emotional experiences. It was suggested at the beginning of this chapter that pleasant emotions were the result of the satisfaction of interests—in contrast to emotional distress which was caused by their frustration. In the preceding chapter, however, it was emphasized that interests are a complex product of many factors. They have their roots in biological urges. But specific interests are largely determined by the total socio-economic and cultural environment in which the individual develops. The present chapter has stressed the importance of level of aspiration as determining the extent to which a person finds it needful, for his self-esteem and status, to carry through a particular interest. A school can thus make a first contribution to a young person's happiness by giving sensible direction to his interests so that they are congruent with his abilities and by keeping his goals so that they are feasible for him.

In the second place, a young person's interests and aspirations at a given time being what they are (and assuming that they are good), the school can help him realize them. As was emphasized earlier in this chapter and in the discussion of special abilities in Chapter IV, the satisfying of interests can be as pleasant *and* as upbuilding as their frustration is distressing and destructive. It is to this constructive task that the teacher's chief efforts should be directed, and in which she can find her own greatest satisfactions.

SUMMARY

The chapter has stressed what has been called a functional concept of emotion. Emotion has been defined as a condition of heightened feeling which may be pleasant or unpleasant according as the interest involved is satisfied or frustrated. If frustrated, the individual may draw back, or he may become aggressive and drive forward with increased and angry effort. Where there is success, there is furtherance of the activity—a tendency to continue it, with heightened vigor. The total organism responds to this total biological situation. With frustration there is interference with normal physiological activities, but a heightening of them with success. The failing person tends to give up what he is doing, but with success he applies himself more. With frustration there is an attitude of irritability or fear, but success brings confidence and agreeableness. Emotional experiences are naturally affected by age and by socio-economic circumstances.

Some frustration and emotional distress are likely to occur whenever a particularly difficult problem is met. A child or adolescent is especially likely to have difficulty when he enters a new school or neighborhood; when his development, as in adolescence, carries him into new interests; when he has trouble with schoolwork, social ambitions, or vocational plans, or has aspirations not congruent with possibilities. When such crises seem to be occurring, a wise teacher will especially try to help.

If frustration becomes acute or chronic, abnormal psychological conditions may result. The unhappy person may become exhausted by his struggle. He may try to run away or escape from his problem, or deceive himself about it, or adopt a pseudo-solution. He may become angry and aggressive. Such conditions are symptoms of emotional illness and call for careful study and treatment.

Emotional problems are particularly difficult to handle because pupils often dissimulate, and the teacher's own feelings are often involved. It is therefore very important to get back of symptoms to underlying causes, and to be objective. Most important of all, the teacher's effort should be to foster success and desirable emotional experiences, rather than simply to prevent emotional distress.

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CHAPTER VII

The Social Psychology of Childhood

The preceding chapter showed how within very wide limits interests are determined by social influences. More than that—increasingly interests *are* social until in adolescence they are predominantly so; the drive for social recognition and status becomes the most pervasively important of all. Later chapters will show how character traits and ideals result from the subtle conditionings of social psychology, and how delinquency may be an outcome of psychologically unhealthy homes and neighborhoods. Emotional stress will be found largely a product of social conflict or maladjustment, and various types of mental abnormality the resultant of such distress long continued. Disciplinary problems in school usually have such backgrounds. In the pupil's social development is thus to be found the key for understanding many of the most difficult problems with which a teacher has to deal. The guidance of this development along healthy and desirable lines might well be considered the first concern of modern education, and the almost complete neglect of this problem the outstanding weakness of the traditional school. An adequate treatment of the social psychology of the first 20 years should thus be essential and central in educational psychology.[1]

It must never be forgotten that development is continuous and cumulative; how a child gets along with other people at 10 or even at 5 may be of great importance in understanding his social difficulties at 15 or 20. Nevertheless, it must be stressed that changes in child nature plus changes in the circumstances of life combine to make the social psychology of different age periods very different. Three such periods may here be profitably differentiated: the "pre-school" years, up to 6; the elementary school or middle childhood period, from 6 through about 12; and the adolescent period, from puberty to about 18. The social psychology of adolescence is in fact so distinctive and so important that a separate chapter will be devoted to it. A concrete description of a typical boy and a typical girl at each stage may make the differentiation clearer.

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[1] It follows that such social sciences as sociology and ethnology should receive more consideration by educational psychology than is usual.

First, Jimmy at 5. Much of the time he plays happily by himself, often talking to himself. Even when with other children he may pay little attention to them. At most, play groups are small—not over five other children. Play (as already described in Chapter V) is usually largely random running about, tricycle riding, block building, or sand-pile digging. He is still very much a home body. His parents are the all-important people in his social world. He plays with children of either sex and even in a group in which all the others are girls; he is not yet conscious of sex. Nor is he modest about physical matters when in the company of girls; he will fight physically with girls and is not embarrassed by physical contact with them. And Betty of the same age is similarly home-oriented, still somewhat of a baby, and as yet also undifferentiated as regards the fact of sex.

Jim at 10 is a different boy. He is very insistent on the fact that he is no longer a baby; the neighborhood rather than the home is his social habitat. A chum of his own age and sex is now at the center of his social interest and he is much in the company of seven or eight other boys of his own age. Jim's mother is afraid the group may take on the character of a gang, but the association is too casual and the composition of the group too variable with circumstance to be so designated in any unfortunate sense. Jim's family is now somewhat on the periphery of his social world. Games are social and loosely organized like marbles or cops-and-robbers; Jim plays little by himself. He pays little attention to girls, plays mostly with boys, will not take part in a game or join a group in which he is the only boy. He is sufficiently conscious of sex to be modest around girls and to avoid touching them. And Betty for her part, now 10, has pulled off into her own sex group, sits with other girls, whispers and giggles with them, plays with them, is modest with boys. She is more conscious of her sex than Jim, partly because she is a bit older physiologically and emotionally, partly because society emphasizes sex to her more by stress upon modesty and the proprieties and restraints of conduct which parents and teachers think appropriate for a girl.

At 15 James is socially a different person again. He now participates in highly organized team games. He will not take part in games with girls, but he does begin to show an interest in such social activities as dancing with them; he is interested in them but self-conscious and embarrassed where they are concerned. Whereas previously the chum of his own age and sex was socially central and the gang of seven or eight other boys the social group, now a member of the other sex is at the center of social interest (his choice as yet varies from time to time, however) and the social group is the crowd of both sexes. His parents are yet more out of his social world and are often regarded with impatience because of their "old-fashioned" notions about hours and behavior. He will not tolerate any sort of physical attention from adults or others of his own sex. Elizabeth is very much interested in boys, but she does not engage in their games. Instead she likes to dance with them, sit next to them, have their attention; she spends much time primping when she is to be with boys. In contrast to James, she indulges in physical affection with other girls of her own age.

In short, it is clear, if one only stops to think of it, that there are marked changes in the social life of children at different ages. These matters must be now looked at somewhat more fully.

THE "PRE-SCHOOL" YEARS

The pre-school years might at first thought seem no concern of school or teacher. But study of this period shows major personality trends often already clearly evident in these first 6 years; habits of social adjustment or maladjustment formed at this time may determine the course of the individual's social relationships for the remainder of his life. So important indeed are these years that the nursery school movement, aiming to guide children's development better than is possible in the average home, has become one of the most distinctive and scientifically productive movements in modern education.

By the age of 3 or 4 some childhood personalities are already clearly recognizable—some as fretful, others gleeful, some placid or quiet, and others restless or assertive. By these ages some babies have so well learned to get their way by temper tantrums that years later they use similar techniques in managing their mates. Spoiled 4-year-olds grow up to be willful adults. A child who has lived in a quarrelsome home or been constantly shouted at and yanked about for the first 6 years of his life is likely to have established attitudes of cringing timidity or callous, noisy self-assertion which continue for years thereafter. In almost all such cases, wise handling during the pre-school years could have largely avoided the unfortunate outcomes.

Social Trends During the First 6 Years.—The newborn infant is a squalling little animal. But response to social stimulation begins surprisingly early. Around 2 months a baby may begin to smile in response to a human voice even though at this age he does not smile at other stimuli. By 7 or 8 months he will stretch out his hands toward an adult, pull at an adult's clothes, cry when an adult stops talking to him. If at this age another infant is placed nearby, the baby may touch him, coo, and smile; otherwise his behavior might be described as socially blind—the partner is treated about the same as are play materials. But around 18 months the interest gradually shifts to include the partner. From 2 years on, the way in which both solitary and parallel play (play where two children are together but pay practically no attention to each other) rapidly decrease is shown in Chart 29. Associative play, already fairly common at 2, increases somewhat, and cooperative play most of all.[2]

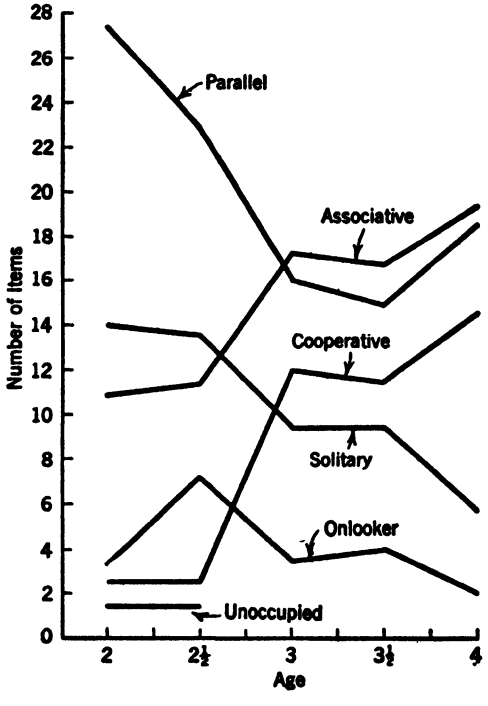

Chart 29.—Mean number of times each activity was engaged in at different age levels (6 children at each level; 600 observations on each child). (Adapted from Parten [50].)

This development of social behavior may be reported in various ways. Another nursery school investigation showed that in free play situations 2-year-old children spent 41 per cent of their time in social contacts, 3-year-olds 64 per cent, and 4-year-olds 77 per cent (41). Further, social play for 2-year-olds is likely to be some relatively unsocial act (like mutual admiration of mud pies) with one other child, whereas a 4-year-old will engage in the cooperative making of sand pies with four others. Further evidence of the increase in amount and complexity of social behavior is shown in Chart 30. Social withdrawings and mishaps decrease; efforts to secure attention and status grow.

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[2] It is much to be regretted that this investigation, like so many others dealing with this period, stops at 4, leaving a distressing gap, as regards both science and child guidance, from here to the elementary school. Why is it that even genetic psychologists cannot see a problem or carry through an investigation with a long-time perspective!

Older nursery school children respond to social contacts by laughing and smiling more often than younger children. But throughout these young ages laughing and smiling occur more often in connection with general motor activity than in purely social contacts (15). One investigator found over these ages a laudable decrease in percentage of pronouns referring to the self (a trend which unfortunately seems not, by many, continued into adulthood!). With increasing age, other

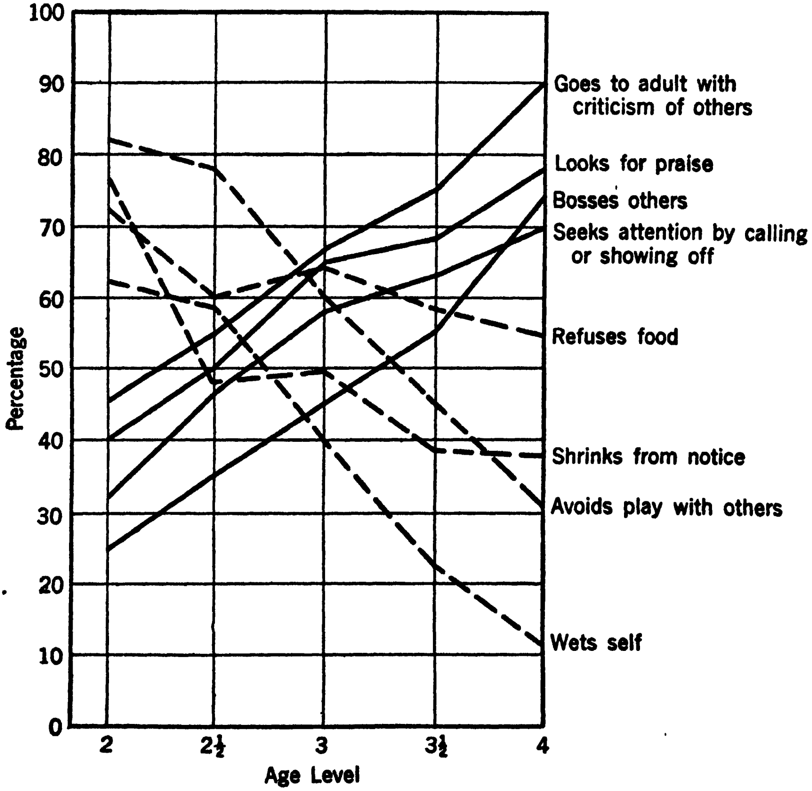

CHART 30.—Developmental course of certain types of behavior (555 children). (Based on Hattwick and Sanders [28].)

children are more frequently referred to by name. That the social world of young children is still greatly home-centered is evidenced by the finding that of the total number of word concepts used by children aged 2 to 5, one-third referred to mother, father, sibling, or home (57). Very interesting are the following percentages of children at each age from 2 to 7 who exhibit competition (23):

Age group	2–3	3–4	4–5	5–6	6–7
Number of cases	8	15	11	20	11
Percentage showing competition	0	43	69	75	86

Seemingly indicative of a growing social understanding of sorts is the summary of records of behavior presumably involving anger that were kept for a month by certain mothers. With advancing age the forms of behavior displayed during anger become more definitely directed toward a given end—presumably often social. The following figures show the percentage of the outbursts at each age involving undirected energy and retaliative behavior:

Age	Under 1 yr.	1–2 yrs.	2–3 yrs.	3–4 yrs.	Over 4 yrs.
Undirected energy	89	78	75	60	36
Retaliative behavior	1	6	11	26	28

Individual Differences in Social Development.—Intensive observations of 20 infants from birth showed differences in "personality" (in irritability, in tone and timbre of the cry, in tonicity of the muscles, as well as the quality of reactions to the test situations) apparent in some from birth and in all within the first 3 months (57). In a nursery school group one child played alone only 1 per cent of the time, whereas four other children played alone 33 per cent of the time (50). In a kindergarten some children made twice as many social contacts as did others (65). Even in the nursery school some children seem to be "born leaders" whereas others are passive and easily led.

Certain sex differences in social behavior appear even in these early years. Boys quarrel more. Girls talk more! Table 22 summarizes some of the data regarding sex differences in nursery school.

An intensive study of a group of 20 children from birth until about 6 years (56) showed vividly the differences in total personality and especially in social reactions and attitudes which children may exhibit. The children were seen at home, at play, at the nursery school, and in neighborhood play, the investigators becoming well acquainted with these children and their families and being accepted by child and family as a friend. Even in the earliest weeks these children showed differences. A boy and girl who

TABLE 22.—Sex Differences in Behavior; Percentage That Certain Types of Behavior Occurred [3]

Behavior More Common with Boys	% Occurred Boys	% Occurred Girls	Difference
Attacks others	60	44	16
Asks unnecessary help	79	66	13
Laughs, squeals, jumps around	68	51	17
Rushes into danger	48	27	21
More Common with Girls			
Stays near adult	41	67	26
Twists hair	37	57	20
Avoids play	40	52	12

were twins were in many respects oddly contrasting. The boy was active, expansive, smiling, constantly seeking the attention of other people; but the girl was more quiet, serious, thoughtful. Yet this little girl even in the nursery school took a somewhat protective and slightly condescending air toward her twin brother. In another family, the boy was, from the earliest weeks, exceptionally strong and adept in movement; on the playground he became something of a problem because his great vigor and skill made him dominate all too easily, and literally run over other children. But in social relationships he was relatively silent and shy. And in all these respects —physique, strength, skill, and reticence—he was very like his father. Another girl was wiry, tomboyish and very active, like her mother in physique and behavior when she was a child. This little girl preferred play with boys, was more competitive than the average girl, more assertive. Yet another girl was described, even in diapers, as petite and with a certain air about her which some people never attain. She had a way with her; clearly the social personality showed early.

The Child's Social Nature and His Home.—The preceding section has indicated that constitutional factors are important in determining a child's relations with others—his social personality. Constitutionally some children almost from birth are energetic, quick, attractive in appearance or manner, responsive to the presence and behavior of other human beings; other children are passive, unappealing, shy. But almost from birth, the baby's responses begin to be modified by other people's responses to him, and more broadly by the total circumstances of his babyhood.

Quite obviously the child of a half-sick harassed mother in a crowded noisy slum home develops different reactions to others than does the only child of doting parents in a quiet suburb. Many other factors operate. The youngest in a large family may be babied and the oldest be early neglected for the next child, with important consequences as regards the social personality in each instance. Personalities in the home may interact in many ways. Thus the father of an exceptionally strong and vigorous boy was strong and active and delighted to play with his son; he also enjoyed having the youngster in his basement workshop—but the father was shy and there were few visitors in the home. Shyness on the part of the boy, and development of mechanical and athletic interests, were natural outcomes. A little girl was high-strung and tended to have temper tantrums. The mother was also high-strung and indulged in emotional outbursts. The father was reserved, dreaded such outbursts, and almost invariably gave in to whatever was wanted. Presumably the child was constitutionally more excitable than average. More important, however, are the further facts that she was frequently excited by her excitable mother and that she found she could get her own way by such means.

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[3] Adapted from (28).

Numerous investigations have shown that homes of different types tend to develop distinctive social characteristics in young children. Children who live in overattentive homes tend to be too dependent on adults, avoid aggressive play with other children, dawdle and leave tasks incomplete, cry easily and lack emotional control. Children who come from homes where the mother is irresponsible or negligent tend to seek attention by showing off, telling fanciful stories, crying easily. Children whose parents share work and play experiences with them have better understanding of property rights, are more co-operative, get along better with other children (26). Nursery school children who come from homes where there are tension and conflict between the parents are more likely to show problems of social adjustment than youngsters from reasonably harmonious homes (7).

Discipline is a matter of obvious concern to both parents and children. How do different types of discipline affect the child's social adjustment? Table 23 shows that the more frequently "natural result" is used the more desirable is the personality trait.[4] But discipline based on temper or on what happens to pop into the parent's head at the time tends to be associated with undesirable outcomes.

Child specialists also agree that consistency of discipline is exceedingly important. Demoralizing to anyone would be inconsistency such

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[4] The following episode may serve as a sample of the application of the "natural result" method in a social situation: A 3-year-old and his 5-year-old brother were having an argument. The 3-year-old's patience gave out and he used his fists. The 5-year-old struck back, and the topic was changed by mutual consent (20).

TABLE 23.—Correlation Between Types of Discipline Used by Parents and Personality Traits of Their Children [5]
(Positive correlations appear throughout only for "natural result" and correlations are all negative for the last four types of discipline)

Type of Discipline	Sociability with Other Children	Attractiveness of Personality	Tendency to Face Reality	Independence of Adult Affection and Attention
Natural result	.19	.33	.33	.37
Rewards	.30	−.11	−.14	−.15
Physical	.05	−.17	−.35	−.20
Isolate	−.28	−.06	−.07	.01
Worry	−.07	−.21	−.30	−.44
Pops into head	−.40	−.54	−.52	−.40
Temper	−.33	−.42	−.61	−.10
Penance	−.15	−.19	−.44	−.08

as the following: An 18-month-old baby refused to take his nap; after he kicked and screamed for five minutes his mother gave in and the nap was omitted. That night when he was put to bed he repeated his tantrum, but this time he was spanked. A day or so later he refused to take his nap without being rocked, and after five minutes of screaming he was rocked. Next day he again demanded rocking and was spanked.

Perhaps it need hardly be added that consistency does not mean unreasonable rigidity. Reasonable compromises between parent and child often avert clashes. Thus a small child who wanted to carry a pan of potatoes which his mother would not let him have because it was too heavy, was quite satisfied when she gave him two of the potatoes to bring along. Sometimes a tantrum may be a largely justifiable device. Thus a 2-year-old repeatedly made a reasonable request for help in getting upon a davenport, but was completely ignored. Finally, in desperation she began to kick and scream and was then lifted up.

As intimated by various of the above illustrations, not only what is done, but the "home atmosphere" in which everything goes on, is exceedingly important. Calmness, tolerance, humor, a voice unexcited and manner unhurried, a perspective such that the parent is not unduly disturbed when a nap is not taken or one child pinches another, calm and prompt application of corrective methods if called for without nagging afterward—such an agreeable home atmosphere prevents many problems from arising and facilitates the handling of those which do appear.

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[5] From (5).

School for Babies.—The little everyday happenings in the life of a 3-year-old baby may seem very unimportant indeed. Yet (as mentioned at the beginning of this section) they may determine the direction of the whole social development of the individual. Adults who are complaining or petulant or irresponsible or subject to emotional outbursts are often what they are because of habits learned in this pre-school period. These problems of social adjustment in infancy are subtle and difficult, and few parents are "professional" parents! In fact, most mothers and almost all fathers have had no education whatever for parenthood. And though most mothers won't admit it, the small child about the home is not always an unmitigated joy; he is sometimes a burden or even an exasperation. Further, many modern homes give no contact with adults other than the parents—aunts and grandparents and friends are less often in the home than used to be the case. The modern small family may contain no other children. How splendid it would be if there were places to which a mother's spoiled brat might go for part of each day to be under the eye of adults who *did* know about small children, and in association with other babies who might themselves teach the brat a thing or two. The nursery school might well seem an answer to prayer.

The nature of nursery schools has already been briefly described in Chapter IV. Here it must be emphasized that the nursery school is most of all a school for social development; it might be called the beginning school for the process smugly supposed to be completed in the private finishing school but almost entirely left out of the usual elementary school program. The nursery school sees as its most important and explicitly recognized task the guidance of the child's relationships with other people, especially through two critical phases of such relationships—the achievement of a first independence of parents and friendly acceptance of adults outside the family, and the debut into the society of other children of the same age outside the family group. For these new contacts the small child must learn the appropriate manners and the ways of holding his own and getting along with all these new associates. Here is a task indeed for child and school.

The careful nursery school knows much about the child and his home before the school year begins. Parents have been interviewed. The child has visited the school with his mother. Perhaps it was arranged that several mothers visited the school at the same time, with their offspring. For half an hour, while the children played and the mothers visited in comfortable chairs at the edge of the playground, the teachers could observe and make some acquaintance with both babies and mothers.

If a child is timid or unused to being away from home, the mother may be asked to stay at school the first day or so. But she must be to one side, with knitting or reading, and must not encourage the toddler to stay with her. Instead attractive play materials are placed at a little distance, and a teacher encourages him to play with them. Usually after a day or so the child pays little attention to the mother.[6] She then remarks to him casually that she is going on an errand but will return shortly. If her absence has not disturbed him she can, from then on, leave as soon as he has become interested in some activity. Thus dexterously and without the infant's awareness has an event of tremendous import to him been brought about. He has left his home and his family and ventured out into the wide world by himself.

Usually he finds this new world delightful. Very possibly the teacher's calm, imperturbable "know how" with children is something of a relief from a home not always imperturbable. There are many things to do: blocks to pile, easels at which to paint, an aquarium with fish to watch, picture books to look at, a piano which the teacher will play. No less interesting are the other children; to an only child they are the greatest novelty. Watching them is an important aid in social development. The shy child is not hurried into participation. The teacher finds play which interests him and, as he becomes accustomed to the school, soon has him playing near other children, as in the sandbox. She may have him and another child help move the teeter-totter and then suggest that these two children play on it, or show him how to do something special which he then shows another child and thus acquires importance and self-confidence.

If two children are too much together she arranges activities so that they join different groups. If in social difficulties a child regresses to mere crying the teacher may say, "Tommy doesn't understand what you want when you cry. Talk to him." And both talking and social cooperation are furthered. Friendly acts are publicly commended. A tease or bully is kept busy at activities which bring him legitimate satisfaction. A contagious good humor eases through social crises which might otherwise cause conflict. The able nursery school teacher regards such guidance of each child's social development as her major function, and her outstanding trait is tact. She is not so much a teacher as a hostess. Would that teachers above the nursery school put even half as much emphasis on such development or had even half her sensitivity to each child's social nature and needs!

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[6] Sometimes much to her distress she discovers that she is not so essential to the happiness of her offspring as she would like to believe. The mother is sometimes more of a problem than the child. She stays morning after morning when she should go, or departs tearfully at thought of separation from her baby. Parent education is an important phase of an adequate nursery school program.

When an attempt is made systematically to determine the outcomes of such programs as regards social development, what is found? In the first place, it is clear that nursery schools do foster social contacts between children. For example, two groups each of seven children averaging 3½ years old were carefully observed in the fall and again in the spring with reference to the number of half-minute intervals in which they engaged in some sort of social interchange with other children. The first group had not been in nursery school before, but the second group had been there for a year or more. Table 24 summarizes the results.

TABLE 24.—Percentage of Half-Minute Intervals During Which Social Contacts Occurred [7]

	Fall	Spring
Children without previous nursery school experience	21	54
Children in nursery school one or more year preceding	47	58
	—	—
Greater sociability of second group	26	4

Those children without nursery school experience rapidly (in fact, even during the first few weeks) gained on the "veteran" nursery school children. Analysis showed that social interchanges in the latter group in the fall consisted in considerable part of contacts with close friends from the preceding year, but over and above this there was a greater readiness to enter into social enterprises.

However, more happens than simply an increase in sociability; a positive personality develops. A nursery school is a lively place; one study has reported the average nursery school child to get into some conflict with another twelve times an hour (conflicts of brief duration, of course, and far outnumbered by contacts friendly in nature).[8] Independence grows, as shown by a count of the number of times a child refuses, by word or deed, to carry out the demands of others or to give ground. Children who had been in nursery school six months were rated higher than youngsters new to the school in sympathy, independence, and self-reliance (64). Careful comparison of over a hundred children who had been in nursery school only six weeks with others who had been there nine months showed the latter group less likely to grab toys or attack others. Table 25 compares two comparable groups and well shows the social gains of those in nursery school.

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[7] Adapted from (32), p. 222. The more detailed data show even in the second group at the end of the year one child with social contacts only 12 per cent of the time as compared with 84 per cent for another, and two in this last group show a decrease from fall to spring. As always, individual differences are a notable fact which must never be lost sight of.

[8] It may be some comfort to the parents of a lively youngster to know that within bounds all this is healthy. The more a child "gets around" the more he is likely to bump into others. One investigator has stated epigrammatically that "mutual friends are more quarrelsome, and mutual quarrelers more friendly than the average" and that "quarreling is part of friendly social intercourse at these ages" (22).

TABLE 25.—Gain Over a Six-Month Period in Certain Personality Traits of Children in a Nursery School Compared with Children Not in Nursery School, as Shown by Ratings on the Bonham-Sargent Scale of Personality Traits [9]

Trait	Nursery School Gain	Control Gain	Difference in Gains
Sociability: Talks	1.0	0.2	0.8
Sympathy: Shows sympathy when stranger feigns weeping	1.4	0.0	1.4
Contentment: Plays quietly with toys given him	1.0	0.4	0.6
Good nature: Cheerful when toys are taken away	0.0	−0.5	0.5
Pride: Shows satisfaction in achievement with toys	1.2	0.5	0.7
Orderliness: Arranges his toys in an orderly way	1.4	0.1	1.3
Lack of initiative: Waits to be told what to do next	−0.9	0.5	−1.4
Suggestibility: Pliable to suggestion with regard to toys	−0.6	−0.1	−0.5

Gradually there are being systematically tried out various ways for developing desired traits. Thus several children who were shy and unassertive (non-ascendant) were helped until they could especially well do certain things of interest to the other children—such things as fitting together the parts of a picture puzzle, making designs with blocks, telling an interesting story. These formerly shy children were then paired with other youngsters while they were dealing with these materials, and they now showed a much greater tendency to lead and assert themselves (49). Clearly the nursery school may serve as an invaluable laboratory in applied social psychology.[10]

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[9] Adapted from The nursery school and behavior, studies in child welfare, *Soc. Sci. Mo.*, 1929, *1*, 43–51, as quoted in (46, 1931 ed.), p. 316.

[10] Perspective with regard to the nursery school and its values must not be lost,

THE ELEMENTARY SCHOOL YEARS

The nursery school has bountiful possibilities for constructive social education. Unfortunately, few children go to nursery school. During the first 5 or 6 years most youngsters have little contact with adults other than their parents, and have few associations with other children, except if there are brothers or sisters, or neighbor boys or girls of about the same age. Social life is so very simple: the parents are the all-important center of regard and prestige and they, with any other members of the home group plus a few neighbor children and perhaps a pet or two, make up a single compact primary social group, as the sociologists would call it.

With entrance into school a new adult, Teacher, takes a place of great importance in the child's life, and the new pupil becomes a member of a new child group, his class. As he gets about more he may become a member of other groups—Sunday school, Scout, Y.M.C.A., club, or gang. Initiation into each—even the most hospitable—presents to the new member certain problems of adjustment. Between these groups there are certain disjunctions and incoordinations; there

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however. As has well been pointed out in a notably careful résumé of the total topic of this chapter (46), present concepts regarding development over the first 4 years have been based all too exclusively on results from nursery schools. Not only are these schools relatively rare, but the situations they present and the behavior patterns they call forth are relatively special as compared with the variety of situations in which children of this age may ordinarily be found. Like every institution, the nursery school has developed certain conventions as regards not only equipment but things to do and daily routine. Children of wealth playing in a park under the supervision of a nursemaid would presumably develop a more limited and surely a different repertoire of social behavior. Slum children with swarming companions and a yet younger child to care for might in their own way show greater social maturity and responsibility. Country children would be in a still different social and "play equipment" situation. Most of the research comes from nursery schools with children from professional homes predominating, with whatever this fact may mean as regards verbal readiness, home surroundings, and parental attitudes. The greatest need at present seems to be not for more research from the university-affiliated nursery schools but for systematic study of children from other socio-economic classes, in street or country-yard play, with whatever equipment and social situations appear there.

Also, the nursery school enthusiast should be careful not to attribute to the nursery school social development which would come about anyhow, as a result of maturation and the ordinary experiences of everyday life. For the time being, the social development of the youngsters in the nursery school may be hastened; but by the age of 8 there may be little difference as compared with non-nursery school children. Perhaps the chief result will be a little more social confidence—an outcome of importance, but possibly obtainable more practically in the great majority of children by other means. In short, it might be charged that the great need as regards understanding of the pre-school child is to get the investigators out of the nursery school!

may be acute conflict, as between home or school and a delinquent gang. In each group each individual is faced with certain questions as to his status in it. Truly the problems with which the child is faced soon become bewilderingly complex. And truly marvelous is the extent to which most youngsters in the few short years from 6 to 12 do find their place in these various groups and get them more than reasonably well coordinated. For around the age of 12 many persons are better adjusted than at any other time in their entire lives. It is the age of happy confident childhood to which adults look back with longing.

The Class as a Little Society—and Teacher.—Most children start to school at 6. All at once (usually there are no first visits and gradual acquaintings such as the good nursery school uses to ease the child into his new experience) on a bright September morning the small child finds himself facing not only a strange new adult in a strange new place but also a whole roomful of strange children. For a timid or a sheltered only child the situation is bewildering indeed.

It will be difficult for the reader, who after at least 12 years of being in school takes the routines and the manners and customs of education for granted, to have any conception of that bewilderment. A college freshman from the country is a sophisticate by comparison! The little first-grader must learn about the comings and goings and when things are done and being on time. There are numerous details of manner and custom: when it is appropriate to speak to another child and when not; when it is commendable for one to help a friend and when it is considered wrong to do so (a most puzzling matter); when and how Teacher may be addressed. Sundry crises may occur. Thus when in the presence of this strange adult and in this great crowd of children a physiological need becomes insistent, there may be embarrassing episodes—as every primary teacher well knows.

The teacher is far more important in this little society than the reader might assume, after a dozen years of habituation to the breed. To the small child her size, adulthood, strangeness, authority, similarity yet difference in status as compared with the parents, all combine to give her an influence far greater than she usually appreciates. The children watch her closely, and they are often far more sensitive and more keen in understanding her attitude toward them than she realizes. A smile and word of praise may make a little girl exquisitely happy. Sarcasm, public ridicule, and especially unfair criticism or punishment may determine an attitude which remains for years.

Strikingly illustrative of this fact is the true story of Grace, as told by herself and *also* by her teachers. A sensitive only child, she entered the first grade with great anticipation of the joys of school. But the first-grade teacher humiliated her by saying that she was behind the other pupils in her reading—and she had difficulty in getting used to the other children. The second-grade teacher was young and pretty—but never recognized children on the street. The next teacher was ill and irritable and jerked children about. In notable contrast the fifth-grade teacher was friendly and her room quiet and restful. But in the seventh grade was one of those big teachers who shouted.

Meantime the teachers were reporting that the child was anxious to please but shy and nervous. In junior high school a brief success as a leader in a student activity built up her confidence greatly, but again things returned to the old level. In college, a brief note of encouragement from an English teacher thrilled her so that she could hardly keep back the tears, but she lost confidence again when criticized. She enjoyed it greatly when a teacher put her on committees, and she worked very hard, saying it was the first time she had had a chance to take part in social activities, as a leader. These teachers reported the girl as "shy, almost like a frightened animal, very responsive to kindness."

Grace is now teaching in a one-room country school, beloved by her pupils and their parents perhaps because she knows how to give the encouragement and kindness she so much desired. It might well be said that her life had been formed by the inconsiderateness and obtuseness of her teachers, especially those in elementary school (63).[11]

An exceedingly important, rather obvious, but nevertheless often overlooked characteristic of a successful teacher is thus the elementary social virtue of considerateness, and more generally the "psychological atmosphere" of the classroom. If she is friendly, fair, and encouraging —not impatient, impulsive in discipline, or critical and sarcastic—she will have met the first requisite of successful social leadership. The social atmosphere thus brought about may largely determine the personalities which the children exhibit there. Miss Brown is a calm, friendly young woman; an unhurried composure is typical of her room, and in it Johnny is friendly and cooperative. Miss Thompson is anxious and suspicious; in *her* room there seems to be always an undercurrent of restlessness and resentment, and when there John is irritable and full of mischief. But there may (and should) be much more involved than teacher temperament and good will; basically more important is the nature of the social structure and procedure in the group. What is meant here can be best made clear by a famous investigation both illustrating and evaluating such factors.

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[11] This case may be considered extreme. But time and again college students have reported incidents from their own childhood showing how over many years they have vividly remembered similar episodes; often their feelings about them are still so strong that they cannot bring themselves to tell the incident to the class. The reader may well go back in his own memories and see whether he does not have poignant recollections of some kindness or slight from a teacher when he was a small child.

Three groups or "clubs" each of five 10-year-old children undertook mural painting, mask-making, model airplane construction, and other like activities calling for planning, cooperation, and working together. A graduate student took charge of one group in autocratic fashion, telling each pupil one step at a time just what to do, how to do it, and with whom to work, bestowing praise or blame in personal fashion, but remaining aloof and not participating in the work of the group. In short, he behaved very much like an old-fashioned teacher. A second graduate student dealt with the second group in *laissez-faire* fashion. He let it do as it pleased, did not participate in discussion or work, and made only infrequent comments. The graduate student associated with the third (democratic) group discussed the total project with the pupils, gave them suggestions when requested but let them decide among themselves who would do which portion of the total project and with whom each would work and which method of doing this or that might be best. He tried to help them in their planning and clarify their thinking, was "objective" in criticism or praise, and worked with them. Each group met twice a week for 50 minutes, and observers kept a careful record of what went on at each meeting. After six weeks leaders and methods were changed about; that is, the leader of the autocratic group moved to another group and there used democratic procedure; the democratic group was handled by a second leader in an autocratic fashion, and so on. It thus could not be charged that results for a given method were due to peculiarities of a particular group or leader.

Two differences between these societies, and particularly between the autocratic and democratic, may here be stressed. The pressure of the frequent directions and demands of the autocratic leader maintained a state of *tension* in his group. He made about six times as many "directing approaches" as the democratic leader. And (the second difference) since he determined the goals, methods, work companions, and tools, the children's *space of free movement* was much less than in democracy. This tended to cause trouble in somewhat the same fashion that trouble arose when a group worked in too small a room. In *laissez-faire* there was also little space for free movement because the children got in one another's way. These two concepts of *tension* as a result of *pressure,* and of *space of free movement,* are very important.

A detailed record of what each group said and did showed that there were about thirty times as many episodes of hostility in the autocratic as in the democratic groups. Sometimes the children handled dictatorially were apathetic; but if their leader left the room, work quickly fell off and displays of irritable aggressiveness toward others in the group were marked. In other autocratic groups the youngsters were markedly aggressive toward one another even when the leader was present, though subservient to him. In the democratic group work went forward much as before if the leader left. The *laissez-faire*-group children "ran wild" whether the leader was present or not. The average number of aggressive actions per 50-minute period was as follows: *laissez-faire,* 38; autocracy (aggressive reaction to restraint), 30; democracy, 20; autocracy (apathetic reaction), 2. Working by himself instead of cooperatively with one or more other boys was twice as frequent in the autocratic regime. Twice children in an autocratic group ganged up on a scapegoat and forced him out of the group; their repressed feelings apparently were thus relieved. Toward the end of the experiment the democratic group voted that they would like to continue the work, but the autocratic group did not wish to do so. Informal talks with the children showed that they liked the democratic leaders best. At the end, the democratic group either kept the results of their work or gave them to the leader, but some of the children in the autocratic group threw their work on the floor and jumped on it (36).[12] The bearings of such experiments and such findings on methods of classroom management are obvious.

Under the pressures and restraints of the autocratic "society" conversation tended to be resistant, attention-demanding, hostile both to the leader and to the other members of the group. In the democratic society conversation was more friendly and matter-of-fact, objective rather than personal; the children had more of a "we" feeling and thus more readily cooperated, gave constructive suggestions, asked information. Chart 31 shows these differences.

In summary, then, if a teacher is to meet successfully the sociopsychological problems of her classroom, she should maintain a "psychological atmosphere" and an attitude of considerateness, fairness, and

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[12] The above description has taken this liberty with Lewin's work, that it has combined results of two experiments to give a more adequate picture of the outcomes of democratic versus autocratic procedures.

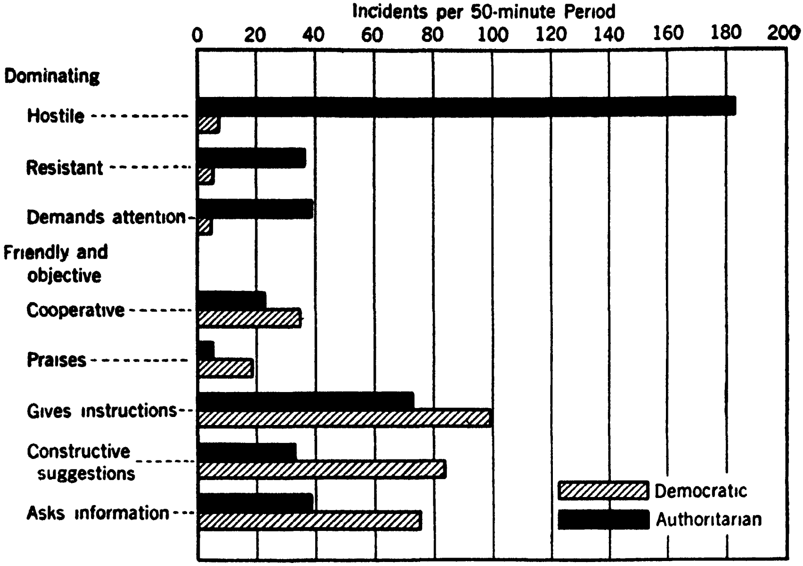

CHART 31.—Components of conversation behavior in autocratic as compared with democratic experimental child societies. (Adapted from Lewin, Lippitt, and Escalona [36].)

friendliness. She should appreciate the importance of the total situation in her class and have some ability to construct situations which guide without putting such pressure on the children as to cause undue tension or hamperingly restrict the space of free movement. If she is at all sensitive to the happenings in her little classroom society (many teachers are not) she is aware that a great deal is happening "off-stage." In certain respects the children live in a society of their own; when they are not in school, this becomes increasingly the important society for them. Much that happens in the classroom has its origins in child society. This topic must now be considered.

Child Society: Problems of Belonging and Status.—Going to school is the distinctive social experience that for the average child distinguishes the years after 6 from those before. But the outstanding social change through the years from 6 to puberty is the escape from the family into the society of other children, primarily of the same sex. The great questions with reference to each child in relation to child society are: Does he "belong"? What is his status? Here are the central problems of these years.

That these years are indeed a time of rapid change from family to other child companionship is suggested by Chart 32. The scene opens, so to speak, with the change already rapidly under way. That is, the curves begin at the age of 8, but from the direction of the curves from 8 to 9 it seems evident that much escape from the family has already occurred. From 8 to 14 going to movies with the family drops from being the average occurrence to being relatively rare, and going with one's own friends becomes the most common procedure. The rapidity of the escape from the family up through 10 is especially to be noted.

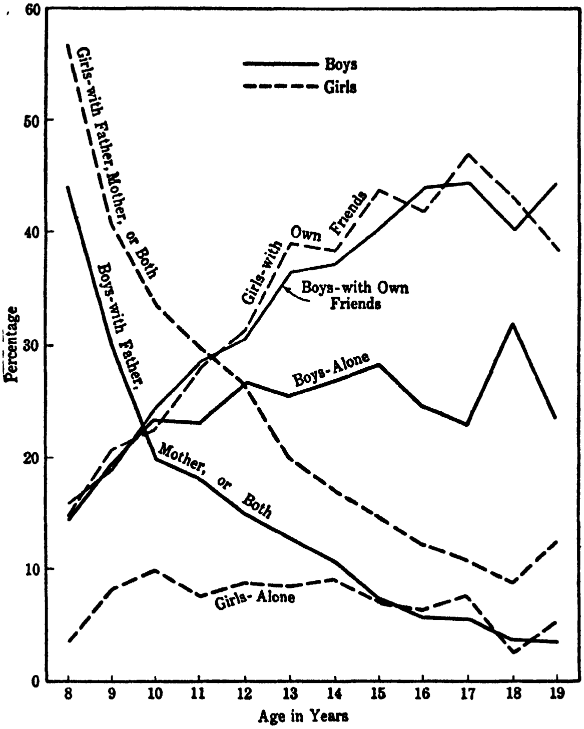

Chart 32.—Change with age in children's companions at movies. (Adapted from Dale [14], pp. 19, 22.)

What is the nature of child society? For the average child at entrance to elementary school it hardly yet exists. He probably already knows two or three neighbor children, and he comes to know others in the neighborhood from going to and from school with them (times when socialization goes forward more rapidly than in the conventional classroom). Child groups spontaneously formed are small—they rarely consist of more than five youngsters—and even these small groups do not stay together more than 15 or 20 minutes. First-grade children have no sense of belonging to the whole class, and they are unable to designate those they like or dislike outside their little circle of acquaintance. They are also little aware of any code of social behavior though they soon learn such elementary requirements as waiting one's turn, not tattling on other children, and playing simple games according to rules.

By middle childhood (roughly 7 or 8 to 11 or 12 years of age) the groups have grown in size to six to ten children and tend to be unisexual. But these groups are still not hard and fast as to membership; and though group undertakings are by now fairly frequent, they are often not completed because the group does not hold together long enough. And the group increasingly has its codes of conduct—one must play fair, do one's share in any group undertaking, divide the spoils evenly, and so on.

In later childhood or pre-adolescence (11 or 12 to 13 or 14) the social coalescing goes yet further. The group is likely to contain ten or fifteen youngsters and to be much more explicit as to membership and activities. It may call itself a club or gang, and as such have a definite membership with a badge or other sign by which a belonger is known; it may have an element of secrecy, specified times and places of meeting, special activities, and leaders or officers.

However, the observer who notices only the gross fact that there are groups is socially almost as blind as an individual who can distinguish only the outlines of large objects but cannot see their structure or the details of which they are composed. Perhaps first to be noticed is the fact that there are some individuals who do not belong to groups. They are isolates. The wise teacher will see them as more serious problems than the child who fails his arithmetic or throws spitballs. They are bewildered and miserably unhappy over their unpopularity, and are establishing habits of timidity or resentment toward others which may continue throughout life.

Sometimes the causes of the isolation are fairly obvious. Thus Harry was slightly deaf and James very nearsighted; the sensory handicap in each case hampered play with the other boys. The Rabinian family were French-Canadian Catholic and stayed by themselves. But sometimes these problems are more subtle. Thus a playground activity record begins with 7-year-old Ralph wandering aimlessly along the edge of the playground looking bored and ill at ease. Two other boys run up to him and grab him—apparently it is a "cops and robbers" game. Ralph pulls away. He goes over and watches children swinging, but they say nothing to him and he wanders off dejectedly. He sits down at one side of the playground and watches the other children. The whole recess was taken up with such withdrawings, attempted approaches, and failures to participate. The situation was explained in part by the fact that Ralph was an only child of strict parents and was without social resource or initiative in child society.

At the other extreme is the leader. What characterizes the leader? Sundry studies have been made of him. He has interests common to the group and is very much of the group, not apart from it or too markedly superior to it. He is above the average in certain traits which the group regards highly: among boys, the leader is more active and successful in games; among girls, more friendly and able in girls' undertakings. In either sex the leader is characterized by initiative and fertility of ideas—suggests things to do and gets things going.

Various circumstances may play a part. One of the writers remembers the accession to his boyhood popularity one summer when a relative gave him a fine "patrol wagon," and for some weeks he was leader of the group which wished to play with his unusual new toy. The son of an ex-governor of the state was chronically a neighborhood leader; he combined natural vigor with confidence coming from the status of his family, and was ever ready with ideas for war-like games based on his father's stories of military experiences.

Leader and isolate—these are two extremes. But in middle or later childhood there is another figure who is very important—the chum. The chum is an individual of the same sex and approximately the same age. He is likely to be in the same school class and from the same neighborhood and of the same socio-economic status. That is, geographical, educational, and socio-economic propinquity brings youngsters together and in total may often seem adequate to account for a chum relationship. Some congruence of personalities is also involved—not all neighbor classmates are chums. Some similarity of interests and coordinateness of traits are also needful. Sometimes an active child may have associated with him a relatively quiet youngster who is a complement in personality. In any case, the chum relationship is usually much worth while. Each gains in confidence, adaptability, and resourcefulness. It is the distinctive social relationship of middle childhood; the focus of social interest has now shifted from the parents to another of the same age and sex. Literature has many stories of the chum, such as *Tom Sawyer*.

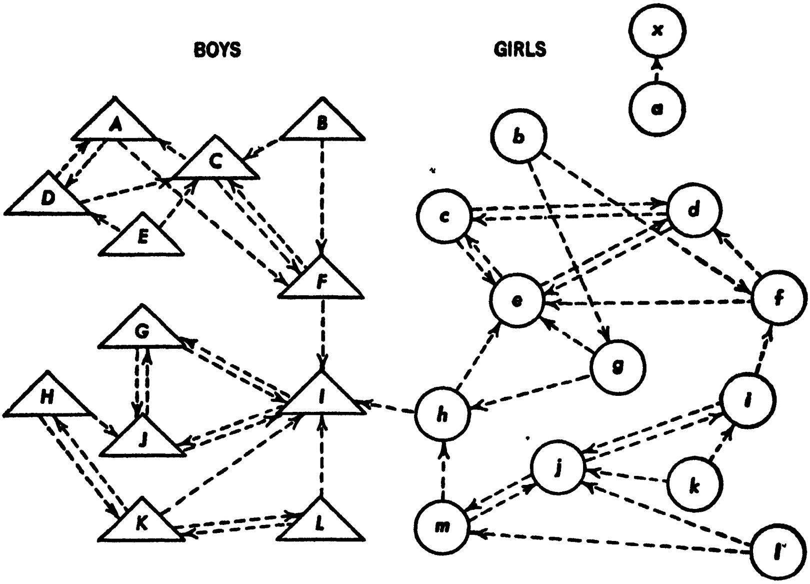

CHART 33.—Social structure of a small sixth-grade class, as shown by results of the request that each child name the two classmates whom he would like best to have sit next to him. The chart shows that Boy *A* chose *D* and *F* and was chosen by *D* and *C;* Boys *B* and *E* and Girls *a, b, k,* and *l* were unchosen or isolates, but *I* and *e* were very popular, being chosen by six and five other children. (Method modified from Moreno's [43].)

Chum, leader, and isolate—these are the three major type figures in child society. But it must not be assumed that except for the relationships thus implied child society is without structure. On the contrary, the structure is often complex. Yet the average teacher is often blind to these facts. Some concrete experimental data may here be of value. The children in a fifth-grade class were told that the seating arrangements were soon to be changed; each was asked to write on a sheet of paper his first and second choice of classmate to whom he would like to sit next in class,[13] and also to give in each instance the reason why he would like to sit next to that person. Chart 33 shows something of the complexities of social interrelationship revealed by this simple, practical inquiry.

Six children (*B, E, a, b, k, l*) were not chosen by anyone, even as second choice. They apparently were isolates. Girl *a* was herself so little acquainted that she made only one choice and that of a girl *x* in another room. In contrast, Boy *I* was chosen by six and Girl *e* by five other children. But the larger structure of the little society is here especially to be noted. The boys are in two distinct groups, the lower one having as its core the close-knit triangle *I-G-J*; the accessory chain is *H-K-L,* with *I* quite clearly the leader. The teacher considered that the character of the group was not entirely healthy; the boys seemed on the way to becoming a mischief-making gang. The girls also formed certain groups, such as triangle *e-c-d,* but these groups seemed on the whole desirable in nature; the big problem among the girls was to take care of the isolates.

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[13] This is, of course, the "sociometric test" of Moreno. His unusual monograph is interesting reading (43).

On the basis of the chart and the children's explanations regarding their choices plus her other knowledge of them the teacher then proceeded with her change in seating plan. Boys *F, I,* and *A* were put together to foster other groupings. Isolates were put with their choices if there was some compatibility of interest. The teacher tried to be the tactful hostess in

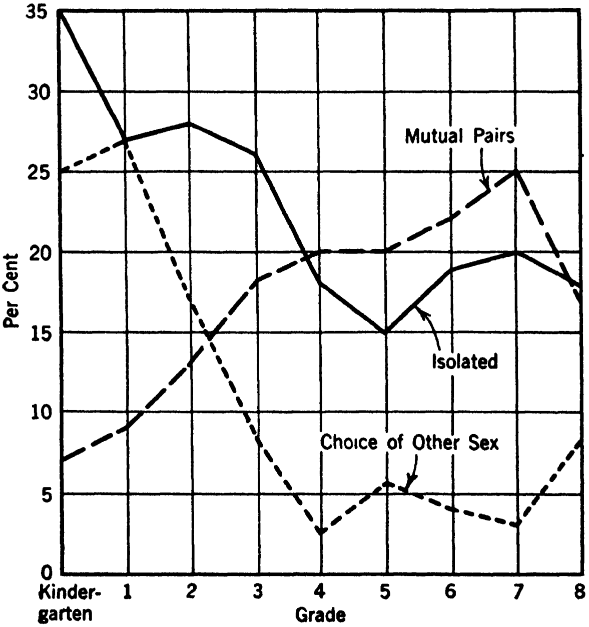

Chart 34.—Social structure in public school classes. Each child was asked to name his first and second choice of the children he would like to have sit next to him. The chart shows that in the kindergarten 35 per cent of the children were not chosen; they were isolates. A quarter of the choices were of the other sex. In only 7 per cent of the cases did two kindergarten children choose each other. (1853 children in a Brooklyn public school, three months after school began.) (Data from Moreno [43], p. 26.)

fostering the relationships initiated by these classroom propinquities. As a result, she changed her class from two cliques, two other loose groups, and sundry outsiders into a much more friendly total group.

What, more generally, are the findings of such "sociometric tests?" Chart 34 summarizes results from 1800 children from the kindergarten through the eighth grade, obtained three months after the beginning of school—that is, after sufficient time in that school year for the children to become acquainted with and appraise each other. Isolates are most common in kindergarten simply because the children are too young to know each other well, but even in the upper grades about a fifth of the children are "unchosen." Mutual pairs (these may be called chums) grow in number, but a majority of the children in every grade are without such friends or at least without a chum in the same class. Choice of the other sex practically disappears in the middle grades but appears again in the eighth. Here is indeed a perspective in social trends and problems.

The remarks of the children in explanation of their choices often gave exceedingly valuable insights regarding levels of social development and values in child society. Consider, for instance, the following (43, pp. 378, 393):

1st grade (age 6–7 yrs.)—Marion chooses Claire: "I like her because she always gives me some candy when I eat with her. She lends me crayons when I have lost mine."

6th grade (ages 11–12 yrs.)—Madeline chooses Marietta: "She is about my size and age. I like to walk with her 'cause I think we look nice together. She isn't noisy or rude. She is willing to play games that are gay and with a lot of action. She is truthful. Also if you ask her to bring you something, she will bring it even if she has a lot of other things to carry just the same."

Joel chooses Gunther: "I keep tropical fish, and I collect stamps, and Gunther likes to see my things. That's what I like about him. He isn't only always wanting to play baseball. I don't see very well so I like to do other things than play sports."

8th grade (ages 13–14 yrs.)—David chooses Marie: "She's better looking than the majority. Curly brown hair, blue eyes, same height as I am. She's my idea of what a girl should be like."

Clearly a child's problem in finding his place and status in the society of his fellows is not simple or easy. A teacher must study both the children and the group. She must help each child make good in some way, as suggested in the preceding section. She must see each class as a total social pattern, into some parts of which a given child may fit well but into others not at all. If she can help him find his place and status she can hardly render him a greater service.

The immediately preceding paragraphs have dealt with child society as it shows itself in the schoolroom for the obvious reasons that it is there both most readily available for study and most a matter of concern for the teacher. But it should never be forgotten that child society exists chiefly outside the classroom, and that status and structure may be different in different groups and situations.

> When one of the writers was in the fifth grade his chum (this because he lived next door, had similar mechanical interests, and lived with kindly grandparents who indulged both boys in numerous minor ways) was in the grade above. A second frequent play companion went to another school, but the families were friends and the children became well acquainted through family and church gatherings. A third pal was in the same school class, but the companionship was based more on the friendship of the two families. An occasional fourth companion was an older slightly lame boy who was liked for his good nature and his pluck and who, because of his physical handicap, found his play level with younger boys. If to the fifth grade in the Murray school so many years ago the Moreno sociometric test had been applied, this somewhat heterogeneous boy group might never have been found.
>
> Further, choice of any companion depends on the situation. Harry was a good person to have sit next you since he was very good in his school work and was anxious to obtain the regard of other children by helping them. But being stout and clumsy, he was no person to choose on your side in a game. Art was biggest and strongest; Jim had the best stamp collection; Will's athletic older brother gave him prestige and taught him athletic skills; Sidney was best in certain handicrafts.
>
> Isolates were rejected because of factors similarly diverse. John was Catholic and Ralph colored; parental prejudice was operative here. Henry showed off in the classroom and was considered teacher's pet. Algernon was affected in manner and sissified. The children in the big Jones family stayed by themselves. The Smiths had recently moved into the neighborhood; nobody seemed to know them, and their only son was quiet, shy, and offish.

Clearly such larger understanding of child society requires knowledge of home and also of community, and use of community resources —church, YMCA, boys' club, playground, summer camp—in dealing with any problems which may be discovered. The influence of the first factor mentioned above, the home, upon the elementary school youngster must now be more specifically considered.

It is first desirable, however, to stress that such means as club and camp should more often be explicitly used as part of a total program for dealing with problems of child society. Suggestive of possibilities here is an experiment in which thirteen 6- to 10-year-old children who were shy and socially maladjusted spent several weeks in a small camp where there were no other children. At first each played alone, but gradually they became acquainted, asserted themselves more, achieved confidence in this group. When they returned home they showed distinct improvement in poise and status (38). In a child group one child—boaster or crybaby or cheat—may be disciplined to good purpose by the others. Or the group may tease or ignore in a way which accentuates the social maladjustment. In such an instance the playground or camp director may perhaps find and feature some ability the misfit does have and thus raise his status, or get some other child to befriend him (48). In any case, constructive social thinking is called for.

Home.—Up to the time of going to school the child has lived in only one social world, the home. In that home there may be conflict, or at least disharmony. But when he goes to school he moves into two other social worlds, school and child society. There may be conflicts or disharmonies between these worlds, and he becomes gradually aware of any conflicts which may exist between his family and the adult world in which they live. Examples will make clear each type of difficulty.

After much bitter quarreling and charges against each other, often in the presence of their only child Mildred, her parents have obtained a divorce. Mildred lives part of the time with one parent and the remainder of the time with the other. Being part of the time in one neighborhood and school and part of the time in another, she makes few friends in either place. In no one of her three social worlds—home, school, or child society—does she feel established or secure.

Mediocre Marjorie's younger sister is brilliant and exceptionally attractive. In a mistaken effort to urge Marjorie to do better work she is chronically compared in disparaging fashion with this sister. In school this younger sister is now in the same grade with her; an unwise teacher in a moment of irritation threw this fact up at Marjorie, and the other children have shown that they sensed the situation. Marjorie's lack of status makes her shy, timid, seclusive, and she is so upset that she works even less effectively than she might.

Mary's ignorant Kentucky mountain parents are puzzled and defensive regarding the school's efforts to help her. Well-meaning but blunt suggestions from the school nurse regarding better diet for her children are resented by the mother, and a visit from the nurse antagonizes still more—it is sensed as critical. Mary's schoolwork is poor; a note from the teacher, asking the mother's help in improving it, is painfully without awareness of the parents' near-illiteracy and poverty; the mother's scrawl in reply is shown to the principal with a comment which Mary overhears. The girl is increasingly absent, and inquiries from the school are met with evasion and antagonism. Home and school societies are in conflict. Further, the family is on relief. Some of the other children know it. Mary senses that her family lacks status in the community, and she in child society.

After six months of pathetic struggle Mrs. Johnson's oldest son died as the result of being struck by an automobile while at play. Albert is now her only child; he is frail and frequently ill. Lest some misfortune come upon him he is allowed little opportunity to play with other boys, is kept from school at the slightest sign of bad weather or indisposition—has become a timid little hypochondriac. In contrast, the red-haired little minister's son Lester, reacting against the dreary decorum of his home, has become the neighborhood brat, leader of his group in mischief. And Henrietta, trained by her once stage-struck mother in elocution, is featured for every visitor and school or church affair—and is scorned by the other children as a conceited little show-off. In each instance the home has failed to understand child society.

Perverse is one "home" consisting of father, three children by a divorced wife, and a stepmother. The stepmother dislikes the children as a constant reminder of the former wife, and the children are bitter against her. A conservative neighborhood regards the divorce and remarriage with disfavor and ostracizes not only the two adults but also the children; neighbor youngsters are not allowed to play with them. The children lack affection and security in their own home and are social outcasts in the community; in class they are emotionally preoccupied and indifferent. No wonder they are suspicious in attitude toward teachers and other adults, defensive and irritable in relations with other children in school, and consort with a delinquent gang "across the track"—it is the only group which will receive them.

What generalizations may be drawn from such instances? This should be obvious: children cannot be understood without some knowledge of their homes. Yet the average teacher knows nothing of the homes of most of her children. More particularly, what are the essentials of a psychologically good home? Two seem outstanding. First, the home should give the child affection and security. Second, it should not hamper—it should rather help—the child's achieving belonging and status in child society. Whatever its other shortcomings, if a home does these two things it is almost certain to be a psychologically good home.

Interesting evidence that the treatment a child receives at home has its persisting and various effects on what he does in school is summarized in

Table 26. These children were rated, in the second grade and again in the fifth, as to their social adjustment in school and also their work habits there. At about the same times their homes were visited and the way in which they were treated there was observed. Approximately three times as many children who were handled in well-adjusted fashion at home were socially well adjusted and had good work habits at school as was the case with youngsters who were babied or pushed at home. The babied children were worse at school in the fifth grade than they had been in the second.

TABLE 26.—Relation of Treatment of Child at Home to Social Adjustment in School and Work Habits There, in the Second Grade and in the Fifth Grade [14]

Treatment of Child at Home	No. of Cases	% Good Social Adjustment in School		% Good Work Habits in School	
		2nd grade	5th grade	2nd grade	5th grade
Babied	51	24	16	27	20
Pushed	22	18	23	18	18
Well-adjusted	73	70	73	75	77

Perhaps it should also be made clear that a home which is psychologically good may materially be very modest—even poverty-stricken. Poverty makes it harder to give the child a sense of security and it otherwise handicaps; but kindly and sensible parents may make an economically poor home an admirable place for child development, whereas a domineeringly successful business man and a butterfly mother may make a wretched home.

Relevant here is a depression-year study of 112 children, half from a community of superior economic status and the others from an inferior urban area. The two groups showed no significant differences in personality development. Such items as poverty, broken home, foreign-born parents, illness appeared to have little effect *on their own account.* The most important influence upon the children's development seemed to be what might be called the psychological climate of the home. Its neatness, the parents' knowledge regarding playmates and willingness to let the child go away from home to play with other children, giving the child an allowance (all factors helping the youngster in child society) were items of some significance. In one family on relief for two years and always near the hunger zone the children showed excellent social adjustment with a wide circle of friends and a fine school record. The parents in another family were in the same financial condition but were constantly worrying about ways of getting more relief; there was constant strife and discontent, and the children were tending toward delinquency. It was also noted that when, if a child was ill, the parents took a matter-of-fact attitude and showed him how to help himself, the illness did not seriously affect social adjustment (19).

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[14] Adapted from (29).

It must also be emphasized that influence of the home is pervasive and often shows itself in ways having no apparent relationship to the home situation. Thus a recent careful study compared children whose parents were decidedly fond of them with children whose parents showed lack of affection or rejection. The first group much more often slept soundly, kept clothes neat, worked well with others, were attentive and popular, liked school; the "rejected" children smoked, sought attention, boasted, were classroom nuisances, had younger companions, were emotionally unstable and antagonistic. Children of dominating parents were neat, courteous, docile; children of overindulgent parents had food fads and poor table manners, were aggressive and disobedient, and lacked interest in school, but were self-confident and expressed themselves well (61).

The Social Triumph of Later Childhood.—The child entering the first grade is little more than a baby. He must learn his way about in school. He must get along in his home, but socially and emotionally escape from it. He must find his place and status in child society. What an overwhelming set of problems! Yet such is the vitality and adaptability of these years that the average person attains in later childhood what is probably the most adequate social adjustment of his entire life. About teachers and school he has nonchalant sophistication. He associates with easy confidence with others of his own age and sex. His family has come to accord him the independence of boyhood, and he has not yet asked for the anxiety-causing freedoms of adolescence. The socio-economic stratifications and stresses of adult life have determined the neighborhood in which he lives, and he is not unaware of such matters; but among those with whom he has contact he associates more freely and democratically than he ever will again. The other sex does not trouble him; for it he has scorn. This is the time of happy, self-sufficient, carefree childhood. In another three or four years, how things may change! It is with these next turbulent years that the following chapter is concerned. But first the material of this chapter must be reviewed with reference to certain practical applications—needful because many children do *not* thus become adjusted, and most might be better.

THE APPLIED SOCIAL PSYCHOLOGY OF CHILDHOOD

This is social development through the first dozen years. Two questions remain: As one looks back over these years, what seem to be the major factors in this development? And what might be done, especially by teachers, to prevent maladjustment and bring more children to the well-adjusted later childhood described above?

Major Factors in Childhood Social Adjustment.—What, first of all, are major background traits and circumstances, and psycho-social influences and factors, that determine a child's social development? As was said early in this chapter, some children seem constitutionally to have much greater social potentialities than others. Some are certainly far more attractive than others in appearance, and probably in disposition—some seem naturally friendly and good-natured and others shy or cross. Some are more alert, quicker, stronger, healthier than others. All such factors play their part in a child's social relationships and status.

As has been mentioned, even in childhood the socio-economic status of the family counts somewhat, democratic though most children are. It determines the neighborhood in which the family lives and the companions which have family favor, as well as such material childhood social assets as size of allowance and attractiveness of toys.

Also, even in childhood, the subtle, pervasive effects of the prevailing culture begin to affect the individual. Boys are expected to be rough and ready, but little girls demure and proper. All are growing up in a competitive and acquisitive culture in which one tries to beat one's opponents in games, get good marks, and do better than someone else.

Each youngster thus has certain social assets or liabilities of biological constitution and of socio-economic and cultural circumstance. But how, with these potentialities, he actually does develop socially seems to depend especially on three further factors.

The first is elementary indeed: Other things being anywhere near equal, children learn to get along with other people in proportion as they are with other people and have experience in so doing. The only child in the city apartment whose chief companion is his mother does not develop socially as he should (nor is the situation healthy for her). In this day of small families and decreased neighboring with the folks next door, special provision for a child to have association with other adults and other children (in nursery school, playground, church or community social center, summer camp) becomes increasingly important.

In the second place, a child gets along in a group and finds a desirable status in it in proportion as he can do the things that others in the group are doing, and do something well enough to obtain recognition. Even a nursery school baby needs to learn certain social skills—how to climb in the jungle-gym, go down the slide feet first, ride a tricycle. An elementary school boy should be able to play softball and the girl to roller-skate. In proportion as a child can do many of these things he can participate widely and thus extend his social experience. In proportion as he can do some of these things better than most he is likely to become a leader. If he is incapable in all the activities of the group he is a social blank and can hardly "belong."

Finally important is what has been called the "psychological atmosphere" of the home, class, playground, or other group. If the mood is good-humored, friendly, relaxed, and operates in a reasonably cooperative and democratic fashion, the social development of everyone in the group is furthered. But if the mood is irritable, suspicious, tense, and there is confusion or inhibiting domination, social development is inhibited or even becomes perverse. If children have many social contacts, if in these contacts they have things they can do together, and if the social atmosphere is such that they associate freely and with mutual facilitations, then childhood social development is almost sure to go forward in satisfactory fashion.[15] Certain practical suggestions for bringing all this about remain to be considered.

Toward a Program for Better Social Adjustment.—From all this discussion, what practical suggestions are there of help to a teacher? Four seem especially important.

The first comes directly from the last item in the analysis above. Every teacher should try to make the "psychological atmosphere" of her classroom good-humored, friendly, relaxed. Further, her management of the class should be such that the situation is democratic, cooperative. This is the first step, a prerequisite for any other constructive social measures.

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[15] The above is of course a gross oversimplification, but it seems nevertheless of value for purposes of clarification and emphasis. A fourth factor might well be the extent to which a child has learned certain rules of conduct the breaking of which makes him *persona non grata* in a group. Not to be a crybaby, not to be always losing one's temper, not to tattle, to keep to the rules of the game, to share, to acknowledge a favor—a "job analysis" of social relations in childhood would probably show that the rules whose breaking really counts seriously are relatively few in number. Morons can learn them, but some bright children don't. Undoubtedly more children could be taught to observe them than now do—to the benefit of all concerned. But if the above three prime needs are all met, usually children will teach each other such rules.

In the second place the teacher should, from consideration of each child's behavior in classroom and on playground and from such other relevant information as she can obtain, come to some evaluations of the way he gets along with other people—especially with his fellows. Such an appraisal is far more important than marking him in arithmetic or deportment. If she does not thus study her pupils' social problems she may not really understand the children at all and may with blundering perversity deal with many of them in just the wrong way.

A typical class anywhere from the elementary grades to college (the reader should consider the students in his classes to see whether this is not true) has a member who is too anxious to have the teacher's favorable regard; he raises his hand too often, takes part too much. Another is a smart aleck, trying to get laughs and attention from the other members of the class. Yet another is overactive, restless, mischievous. A pretty little girl plays up to the boys, and some boys pay too much attention to her. One girl is able, but never participates in what is going on unless asked. Another does little but sit, apparently daydreaming. A fourth girl is sensitive, critical, unsocial. In a given class hour only eight or nine out of the class of thirty really take much part in things. Three or four are disturbers. They may be impertinent, cheat, play truant. There are about a dozen ordinary, somewhat colorless, reasonably well-behaved youngsters who have so little classroom personality, good or bad, that the teacher tends to forget them.

It is only natural for the teacher to encourage those youngsters who act in accord with the school program, and to call little upon those who contribute little. The persistent seeker of her attention she bluntly snubs. If she is a vigorous person she may counter the aggressive youngster with aggressive behavior of her own. If she is kind, she may hesitate to disturb the shy, sensitive child; anyhow, he presents no obvious classroom problem. In all of these instances she may be doing exactly the wrong thing. The boy too persistently bidding for Teacher's attention is compensating for failure to make good with the other boys outside of school; he needs to be helped with that problem, not cut off from the one source of favorable attention he has found. The overactive boy needs to be given responsibility and things to do, not challenged to yet more aggression. The daydreamer and the sensitive girl are really the most serious problems in the class; somehow the teacher should get them out of their isolation and into the social group. The colorless non-participators are the ones who most need experience in participation.

Evidently such insightful understanding of these so various social problems presented by these so different youngsters requires some appraisal of their social liabilities and assets, their position in their homes and their play group as well as at school. Special attention should be given to those quiet, commonplace school children so often overlooked because there is nothing special about them to catch attention. Not very attractive, not very vigorous, from drab homes, socially isolated or with a chum like themselves, they lead a socially half-starved existence. They are the forgotten children.

The third step is obviously to act on the basis of such information. All too often the teacher will have to depend entirely on her own social ingenuity and good sense; her superiors and her books in psychology and education will seem to offer little aid. They will tell her more about how to help children in arithmetic than in getting along with people. But research is gradually being done that will help her. As already mentioned, it has been demonstrated that if a shy child is helped to gain some special skill he may then show more confidence and thus achieve status in the class. That is, consideration of the second factor in the above analysis—the child's equipment of socially valuable skills—may give some hint as to a fruitful means of dealing with his social problem. Or the teacher may find that he already can do something well or has some special characteristic and by playing this up gain him prestige. Thus two girls of foreign-born parents who felt shy and out of place became looked up to when the teacher featured discussion of their parents' homeland and had them bring interesting handicraft from their home. Different children present very different problems, and the teacher must be clever in social maneuvers. But if she will thus carefully study each pupil and base her dealings with him upon this understanding, she may expect numerous benefits therefrom.

Now the fourth and last suggestion. At the beginning of the preceding section it was emphasized that children learn to understand other people and to get along with them by actually having varied social contacts and experience. In present-day America, with its small families, frequent moving about, less visiting and neighboring, absence of parents from the home, and social affairs in which the children are not included, special efforts are needed to bring about many and varied social experiences. The quiet commonplace youngster mentioned above may not know any other woman besides his mother (he does not feel really acquainted with his teacher) and in addition to his father the only other man he knows is the school janitor. There are few other children in the neighborhood, and he has little to do with them. Summers are dreary indeed. Elementary schools as well as high schools need a social program. They need to consider the resources—playgrounds, community centers, churches, camps, organizations like the Boy Scouts and Camp Fire girls—with which cooperation in such a program might be worked out. Social planning is a major need in elementary schools.

SUMMARY

In summary it may be stressed that this chapter deals with what is in many respects the central problem of development over the school years—the problem of learning to get along satisfactorily and effectively with other people—and with the first phase of that problem, from birth to puberty.

In the pre-school years the child's major problem is adjustment to his family; his parents are at the center of his social world. In the home, sundry factors of physical constitution, health, home atmosphere, parental attitude and discipline combine to develop in him attitudes of timidity or assertiveness, good nature or irritability. The few children so fortunate as to go to nursery school have "professional" guidance in first adjustments to adults and children outside the home.

However, not until they enter elementary school do most children come to know and have continuing relationships with an adult outside the family. The prestige of Teacher as parent-surrogate, source of knowledge, wielder of authority, bestower of favors, is enormous. The social atmosphere of the classroom and the social structure (autocratic, democratic, or *laissez faire*) which she there—perhaps all unconsciously—sets up, are of great influence on the child's social behavior and development. But even more important for his future is his debut (which for most children really begins in the elementary school) into the society of his fellows. There he seeks belonging and status; and though associates and status may change, it is of great importance that he does find a respected place among his peers. Although the important people in his social world are now his fellows of the same sex and approximately the same age, and the most important person is his chum, the family continues as an influence able greatly to help or hinder him in thus finding his place in the world of his own kind.

Certain factors are of special importance in affecting social development. Some children almost from birth are favored by greater physical attractiveness, vivacity, vigor (all traits having social value) than others. The family socio-economic status may help or hinder. Within the limits roughly set by such social assets or handicaps a child's social development seems to be determined in particular by the amount and variety of social experience which he has, his equipment of socially desirable social skills, and the social atmosphere of the groups of which he is a member. His conformity to childhood's code of conduct (not to tattle, not to be a crybaby, etc.) is also important. Schools can aid social development by creating such a favoring social atmosphere, studying each child's social problems, aiding him on the basis of such understanding to make good socially, and providing a rich and varied social experience. There is every reason to believe that the schools could increase greatly their effectiveness in thus furthering the development of desirable social personalities.

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CHAPTER VIII

Distinctive Problems of Adolescent Social Development

It is a psychological truism that development is continuous. In accord with that fact every other major phase of development is treated in the first part of this book in a single chapter, as a continuous process through the first 20 years. But social development largely changes direction in adolescence. Sundry circumstances emphasize that change and complicate the problems. About this time the youngster goes from the elementary school, in which he has been a member of a compact class group under a single "parent-surrogate" teacher, to a large secondary school under several teachers. Social life there is very different. Parents and other adults take a somewhat different attitude toward the girl or boy who has passed puberty. Society in general looks upon the adolescent as no longer a child and considers different types of social behavior now appropriate. A separate chapter dealing with these matters thus seems pertinent.

ADOLESCENT SOCIAL LIFE

As already pointed out, spontaneously formed social groups during the elementary school years are usually made up of one sex. Toward the end of this period there seems even to be a certain drawing away from each other on the part of the two sexes—and much scorn on the part of 10- and 12-year-olds for adolescents' interest in the other sex. Then a couple of years later these once-so-scornful youngsters begin, to their surprise, to find themselves thus interested. And before long the social life (and in fact the entire life) may be dominated by intersex relationships. This new, dominant problem of adjustment to the other sex must, then, be first considered.

The Achievement of Heterosexuality.—The achievement of heterosexuality has been called the most important and distinctive problem of adolescence. This formidable phrase means simply the attainment of a normal, healthy interest in and relationship with the other sex. Such a development might seem physiologically almost inevitable, biologically so natural as to present little difficulty, and so almost universally attained as to need little consideration. On the contrary, its attainment in our society presents many difficulties. Many people never attain satisfactory adjustment to the other sex. This is no minor matter, unimportant as compared with such issues as vocational success. Failure to achieve heterosexuality in adolescence is likely to cause failure in marriage, lack of normal participation in adult social life, emotional stress, and a warping of the whole life. Education should give far more consideration to such a matter than to Latin or geometry. Schools are now doing far more than they did to help adolescents "achieve heterosexuality." But they might do much more.

From the above statements it must not be inferred that there are no sex problems before puberty. Curiosity on the part of children regarding sex is healthy and normal and, if met with matter-of-fact, straightforward answers so that the child does not worry about such matters or dwell upon them, it is better that there be this curiosity than not. Of course not all childhood sex interest is healthy, though most of what disturbs adults should not do so.[1] Episodes of mutual curiosity and sex play between children may not be entirely desirable but are relatively common. They are also to be met calmly, with such explanations as seem called for and then diversion of attention to other interests and other companions—*not* by horrified moralizing which further fastens attention on these matters.

Entirely normal is occasional childhood anticipation of the thrill of interest in some member of the other sex—some curly-headed little girl is discovered by some little boy to be really a surprisingly attractive person. In healthy child society, however, the rapidly changing manifold interests, and the teasing of other little boys, soon dispose of the matter. Demonstrativeness between girls is common. In a considerable number of such situations there is at one time or another some sex feeling and more or less sex play (17). But again ordinarily no harm results, unless as a result of clumsy adult dealing with the situation. Portentous moralizing is in almost every respect the wrong approach; the child's attention is centered on the undesired acts rather than distracted from them, emotion is heightened rather than decreased, and the child is made to feel ashamed and apart from other children rather than stimulated to other companionships. Episodes more or less homosexual may also occur among boys and are to be similarly regarded and calmly dealt with if necessary. It should also be mentioned that occasional masturbation is an almost universal phenomenon, most commonly beginning in childhood. It usually causes no harm unless bungling adults foster feelings of shame and guilt that are in themselves harmful and cause morbid dwelling on the act tending to its excessive recurrence.

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[1] Amusingly often, the child's attitude is healthy and matter-of-fact, but the adult grossly overconstrues the whole situation, or puts sex into a situation that is really without any sex connotation. Well worth pondering is the story of the little boy who suddenly asked, "Mother, where did I come from?" Fresh from a mother's club lecture on the importance of telling a child all, she proceeded to do so. "Hmmmm!" said her somewhat puzzled and somewhat bored offspring when at length she had finished. "The boy next door comes from Wisconsin!"

What are the important points to keep in mind, if one is to have some understanding of youngsters when they are going through this so exciting experience of discovering the other sex? First stressed may well be this fact: Because this experience is so exciting and so new, at first these boys and girls do not know quite what to make of each other or how to get along together. If, as will be explained later, emotional strain is defined as a condition arising when the organism does not know what to do, then such a situation is emotion-arousing. The boy now sees even the neighbor girl in a new way that gives her an interest she never had before. She really is, in subtle ways, a different person from the leggy kid he knew when they both were 12. There are also many complicating circumstances. This 14-year-old boy has recently entered the big high school where there are many girls he never knew as children; these new feminine associates seem even more glamorous. Further, there are many situations, in this big school and with these attractive girls, where he doesn't know what to do. There are routine matters of manners, and more general problems like what to talk about with a girl. Social occasions, dances for instance, call for new social skills and graces, as well as clothes and money, which he may not have. Finally, troublesome new questions arise as to what one ought or ought not to do. There are controversies with the family about the time of getting home at night. More intimate problems come up. How about petting? How far should one go or can one go safely? The youngster wishes he knew more about sex.

Surely here are questions aplenty for youngsters still in their early and middle teens to deal with. Presumably failures to deal effectively with them might be in either of two directions. Disconcerted and timid in the face of all these manifold difficulties, a youngster might avoid them by withdrawing from association with the other sex. Or he could become too much interested or go too far. The last extreme might occasionally lead to scandal. But from the point of view of mental health the first is far the worst. For the introvert youngster without normal healthy association with the other sex, with sex interests either stifled or finding only indirect satisfactions, with acquaintance and understanding of the other sex so limited that marriage is either unlikely or likely to be unhappy, the prospects for a normal adult life are indeed slight.

John was small, awkward, and shy. His parents were "good plain folks." He helped in the little family store afternoons and Saturdays, and had little leisure time and little money. "Society" was a phenomenon of which his family was hardly aware. At first he had tried, awkwardly, to get acquainted with some of the high school girls. Some had snubbed him. Others had been friendly enough—but he didn't know what to do. He didn't dance. He was too shy for even a minor intimacy. Gradually he came to accept the role of social outsider. Girls are people as mysterious to him as members of another race.

Ruby was the pretty youngest daughter in a large Italian family. In prohibition days the father was a bootlegger. What with her older brothers and sisters and the hard sophistication of her father, there wasn't much she didn't know. She knew her family didn't rate. But in social competition she had much to offer—her dark vivacity, her racy "line," and a willingness to go further than most.

Anyone in a new situation and faced with many new problems is wary, anxious, and insecure; he ventures and then draws back if all does not go well, and he is sensitive and suspicious. So as girls move into adolescence they begin to spend recess doing things which will get the attention of the boys, and talking with them. At first there is relatively little choice on either side; boys and girls are getting acquainted and sizing each other up. The girls rather than the boys are really most active in this process; that too little recognized and rarely adjusted to fact, the earlier sex-social maturing of the girls is here the important factor. Another frequent outcome of this earlier maturing is the tendency of many girls, finding the boys of their own age immature and unresponsive, to seek the attention of older boys. And the whole situation is still further complicated by a second oft-neglected biological fact (also stressed in the chapter on physical growth), the great individual differences in the age of sex maturing. Little wonder that many youngsters have trouble achieving this new social adjustment in this complicated and rapidly changing social situation.

Madge, who is sexually mature, tries to get the attention of Jimmy, a classmate who is still pre-adolescent. Jimmy doesn't quite know what to make of the situation. The boys who have been Jimmy's friends are associating with girls. But Jimmy is still boyish in size, figure, and voice. He draws back, rationalizes by saying to a teacher that he thinks relations with girls are best postponed until after school years. Really he is worried about his size and voice and lack of masculinity and the fact that he is being left out of the new groups of boys *and* girls which are forming among his classmates. For him later to find a place in heterosexual groups will probably be a bit awkward; if he does, it will be with a group chronologically (though not physiologically) younger.

But his problem is not so difficult as that of Jane, whose delayed puberty brings it about that she is awkward and unattractive when her friends have matured to undoubted sex appeal and are just a bit boy-crazy. All their social interests and conversations are now boy-centered. Two years ago her wiry tomboyishness made her something of a leader among the neighbor girls. Now she tends to be left out. And it will be more difficult for her than for Jimmy to find heterosexual companionship in a younger group; a boy is less likely to run around with a girl two years older than with one two years younger.

Rose presented a largely opposite problem. She developed feminine contours and an interest in boys two years earlier than her chums, and got a reputation for being oversexed and sophisticated as a result of associations with older boys.

There are evidently many factors which complicate these first efforts of boys and girls to get acquainted with each other. Those who finally achieve a satisfactory "heterosexual adjustment" usually go through many difficulties. Thus high school girl Betty (6) is three times rebuffed by boys she invites to school parties and resolves for the next two years not to go out with boys any more. She soon breaks this decision, only to become interested in a college student partly because his greater maturity and assurance give her a feeling of security, partly because she admires and feels comfortable with her older brother and hence with young men like him. But college students pay little attention to her. She becomes greatly concerned about her appearance and distressed about a mole on her face.[2] She also gives much thought to her manners (a remark of another college student suggested to her that she would be more attractive to men if she were sweeter and more demure) and her conversation. Her ignorance and timidity regarding sex tend to make her feel insecure and self-conscious with boys; her information is vague, and her feelings are so new and strong that she is afraid about what they might carry her into.

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[2] Acute sensitivity about even slight blemishes is common. The adolescent who is more handicapped in appearance as by acne, banded teeth, adenoidal features, or cross-eyes may become so self-conscious and shy as to affect his whole personality. Correction of such defects, before adolescence if possible, pays manifold returns psychologically.

Gradually the majority of adolescents find activities (such as dancing) which facilitate girl-boy association. And they find others of both sexes who are congenial in these new interests and activities. This new group, the "crowd," becomes the typical adolescent social group. A crowd is usually composed of a dozen to twenty members, about half of each sex, who go around together steadily. The influence of the crowd is great. The members wear the same kind of clothes, use the same catch phrases, dance almost exclusively with one another at parties, and in any social relationships tend to form a definite clique. A boy or girl is either in a crowd or out of it; one can no longer ramble from one group to another as in early childhood. The members of the crowd may criticize one another in private but they present a united front to the world. Much of the friction between parents and adolescents comes from conflicts in standards as to behavior between the home and the crowd—and the crowd usually wins.

As there is a shift in the composition of the social group from the gang of one sex in childhood to the crowd of both sexes, so there is a shift in the center of social interest from the chum of the same sex to the "girl friend" or "boy friend" of the opposite sex. Such attachments between boys and girls of this age are desirable and in fact necessary for healthy development. Since these feelings of interest in the other sex are so new and so strong, and since unfortunately the average adolescent has little understanding of himself, sex, or the other sex, there is likely to be much blundering about. There are episodes of puppy love which seem very silly. Conduct is often not as restrained as adults think desirable and not infrequently it might be considered scandalous. The object of affection may be some scatterbrained little girl whose sex appeal is based on most superficial elements of appearance and conversational line. But in a lively heterosexual adolescent society acquaintance is soon made with many members of the other sex, and they are constantly being discussed and appraised, with increasing shrewdness, in the interminable talk within each sex group about the other. The present-day frank acquaintanceship among adolescents is certainly healthier than the awkward unfamiliarity with the other sex which was common forty years ago. Interest in and shrewdness regarding the other sex are healthier and safer traits than callow innocence or frigidity or homosexuality.

The innocent young girl who is beguiled by the roué and the self-made man who is captured by the gold-digger are stock examples of unfortunate outcomes of lack of such shrewdness. Lack of normal interest also has frequent unfortunate outcomes—marriages unhappy because of coldness or hostility on the part of the wife, or an adulthood sexually colorless or homosexual. Worth noting here is the finding that homosexual episodes are significantly less frequent among women who are graduates of coeducational colleges than among graduates of colleges for women only (17).[8]

Frequent everyday acquaintance with the other sex is also healthier and more productive of real understanding than the pseudo-experiences of moving pictures or pulp magazines or the self-manufactured pseudo-experiences of daydreaming. As has been pointed out, the world of current movie, radio, and magazine fiction is false in its emphasis upon impulsive romanticism in relations between the sexes, an expensive and feverish social life, and standards of attractiveness and attracting which are unrealistic. Standards of desire in social life and companionship are thus set which are likely to lead to extravagance and dissatisfaction with things as they are. Nevertheless, as was also pointed out earlier, movies and also the radio may be informing in ways often helpful as regards manners, conversation, dress. Chronically they set the fad in make-up, dress, catch phrases, and amusements.

More or less adolescent daydreaming about the other sex is certainly practically universal. Habitual daydreaming in an adolescent social isolate may be evidence that he or she has given up the struggle to find heterosexual adjustment; it should be considered a symptom of social pathology.

As was mentioned above, in a lively heterosexual adolescent society the members of each sex are constantly being appraised by the other sex. In this process certain likes and dislikes and standards are developed and constantly revised. Many of them are trivial and sundry of them undesirable. But in any case they are important as evidence of the adolescent "culture" of the moment and as a greatly influential factor in the group. Sundry studies of the matter have been made, the procedure usually being a request for an anonymous statement or checking of answers to a list of objective questions. A study recently made in a local high school may serve as illustrative. Girls were asked to write an anonymous paper about what they liked or disliked about boys—in public, at home, around school, and as regards their clothes, personality, and action on dates. Boys were asked the same questions about girls.

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[8] Also worth mentioning is the further finding of this investigation that over half of all the women from whom data were obtained reported that they had at some time had strong feelings for some member of the same sex. The adolescent crush on another member of the same sex may be considered a usual and generally harmless episode in the process of shifting emotional fixation from the chum to a member of the other sex. As with episodes of this type in childhood, there should be no solemn moralizing, but instead a calm seeing to it that the two girls (or boys) have plenty of other vigorous interests and companions. Above all, at adolescence there should be companions of the other sex. Significant is the fact that such affairs usually vanish with amusing quickness when eligible members of the other sex appear.

The girls didn't like boys' hair cut short to the point of bristliness, or greasy hair, or shirt tails out, or trousers unpressed. Boys didn't like skirts *too* short or make-up too thick. In general, the desire seemed to be for reasonable neatness and good taste. The boys as a rule liked girls who have good manners, are natural, and are not show-offs, smokers, or gigglers. They liked to be introduced to a girl's parents. They liked to have girls plan something for a date, talk well, dance well, not make undue demands as regards money. Girls wished the boys would compliment them oftener, help them with coats, dance well, not brag. "He shouldn't spend half the evening talking to a girl's father about hunting," nor should he, when with a group of other boys, pass a girl without speaking. The girl should not be too forward, nor should a boy "take a girl out just to neck all evening." But a boy shouldn't be bashful, and should know how to assert himself. . . . When the results were all compiled, the boys' comments were read to the girls, and the girls' statements to the boys. It need hardly be said that the discussions which followed were lively. They were considered also very worth while in furthering better all-around social understanding and adjustment.[4]

More systematic but less concrete and redolent of adolescence are the findings of a study summarized in Table 27. A thousand high school and college students were asked to rank certain personality traits as to desirability in a person of the opposite sex they would like to go with. The reader may be skeptical about the primacy of "real brains." But the rankings are nevertheless of decided interest in sundry respects.

Association with One's Own Sex in Adolescence.—As described in the preceding chapter, the social psychology of later childhood is primarily the story of relationship with one's own sex. Ordinarily many of these acquaintanceships carry over into the adolescent period. Much that has been said about childhood society is applicable here, but there are important differences. Certain of them have already been touched upon.

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[4] Columbus *Citizen*, December 10, 1939.

TABLE 27.—Order in Which High School and College Students Ranked Desirability of Traits in Companion of Opposite Sex [5]

Trait	Order of Rank of Traits			
	High School		College	
	n 443 Girls	n 426 Boys	n 108 Women	n 96 Men
Real brains	1	1	1	1
Cleanliness	2	4	5	7
Good health	3	2	4	4
Dependability	4	6	2	3
Cheerfulness	5	5	8	6
Sex purity	6	7	7	9
Considerateness	7	12	3	5
Liked by parents	8	10	10	11
Hard worker	9	8	9	10
Good conversationalist	10	11	6	8
Good looks	11	3	11	2
Goes to church	12	9	18	16

In the first place, since adolescent society is dominated by heterosexual interests, associations and status with one's own sex are affected by this fact—especially among girls. Thus the girl who is not popular with the other sex hardly maintains close friendship with girls who are. Differences in age of reaching puberty may cause one boy to leave another behind socially. Entrance into another and often larger high school, to which some friends do not go, disrupts certain friendships and offers opportunity for others. Also, social and economic factors begin to come in as they have not before. Though operative in the background in childhood, now family prestige and economic status count more.

The varieties of contacts increase. Some contacts begun in later childhood may be continued in adolescence, such as scouting or camping. Athletic teams play an important part in bringing many youngsters together. So may hobbies. Some companionships are protective, as when two boys who fail to make heterosexual adjustment find refuge in association together. Common interests in school may be a basis.

Associations differ in various ways from those of childhood. They are more intense partly because everything in adolescence is so, and partly because adolescents feel a need to band together since they are breaking away from the family and are conscious of many problems. Talk is more serious and ranges over a great variety of interests and

[5] (31).

problems. Sports talk is interminable with some. But there may be serious discussion of vocational plans, even of such general issues as international affairs. A perennial topic is members of the other sex; as mentioned earlier, this talk serves an important purpose in developing understanding of the other sex. Another perennial topic is sex. Warily, affecting sophistication, each trying not to show ignorance, they learn or try to learn from each other. Often they do help each other. A girl said, "We often find one of us knows practically nothing of what she should know. We try to explain the best way we can." Help is given on social difficulties. Another girl told how "Maizie was so shy with the boys . . . but we told her how to act, and now she's able to be herself with them" (52, p. 534).

It was pointed out in the preceding chapter that in childhood society there are many isolates and that the structure of child society is complex. Among adolescents of the same sex it might be expected, because of all the many disturbing circumstances, that differences in popularity might be greater and cases who have achieved little popularity more common. Various findings indicate that this is probably true; certainly problems of status are frequent.

Thus after two months together in a summer camp 118 boys were each asked to list his five tent mates in the order of his choice of them as friends. Fourteen per cent received only last or next to last choices. Another study of over 600 boys showed the friendship of 13 per cent almost entirely "unrequited." That is, the boys a given lad rated as his best friends regarded him as down in sixth, seventh, eighth, or lower place. The situation of such lads is indeed distressing. "Their deep and eager longing for the comradeship of understanding friends denied, they feel the dejection and loneliness of those who are in the social group but not of it. . . . With shrivelled ego and punctured self-esteem they seek by devious ways to convince themselves that they possess a worth and a social status that their world of associates cruelly denies" (18, p. 125).

Many adolescents thus are not popular. They do not have mutual close friends. It is very important for their well-being and their happiness that they should achieve acceptability and have friends. What factors appear to be operative in determining friendships? What are the things adolescents do which make them liked or disliked? Answers to these questions should help teachers in guiding adolescents, might aid young people to make themselves more popular and find friends. First, what factors seem to be involved in friendships?

A preliminary question might be as to where friendships developed. Presumably they would appear wherever potential friends were brought together. Hardly unexpected but interesting nevertheless are data showing that 54 per cent of junior high school pupils' friendships developed at school, 25 per cent in the neighborhood, 8 per cent in connection with a church, 3 per cent in connection with a club, and 10 per cent from miscellaneous circumstances (27). It is a fair guess that senior high school would be the beginning place of a yet larger proportion of friendships. That schools are thus places where friends are made is surely important. But there is still the question as to who are potential friends.

TABLE 28.—Degree of Resemblance Between Friends of Same Sex in Various Factors as Indicated by Correlations [6]

		200 Adolescent Boys		200 College Sophomores	
	280 Jr. High Boys and Girls	Mutual Friends 38 Pairs	Friends in Summer Camp 62 Pairs	Men	Women
Socio-economic status	.71	.73		.20	.24
Chronological age	.47				
Mental age	.42	.65			
Intelligence quotient	.33			.14	.11
Behavior adjustment		.40	.35	.38	.42
Pleasingness of personality				.34	.53
Social intelligence				.44	.54
Camp skills			.42		
Years in camp			.43		
Number of play interests		.48			
Moral knowledge		.34			
Acceptability among associates			−.22		

Table 28 throws some light on this matter. It shows the degrees of similarity among mutual friends in various respects, as found in three different investigations; it includes, for perspective and as of more immediate interest to the college reader, results from college as well as secondary school students.

For the secondary school students, living at home, the greatest similarity is in socio-economic status. The college students show a much lower correlation here; doubtless the chief reason is that they are away from home, though the college group may be more homogeneous in this respect and the factor for this reason count less within that group. Friends also tend to be more or less alike in abilities, social adjustment (if behavior adjustment, pleasingness of personality, and social intelligence may be grouped under this general head), and "know-how" in the group (such as camp skills). The negative relationship for "acceptability among associates" may be due to the tendency for a leader not to choose a rival leader as a friend, or to other analogous complementary relationships. Young people may tend sometimes to select as friends persons who possess qualities they admire but do not possess (7). Similarity of standards and ideals is likely to be important.

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[6] Adapted from (18), (27), and (21).

TABLE 29.—Relationship of Scores on a Test of Social Usage to Occupation of Parents: 1373 Junior and Senior High School Students [7]

Parent's Occupation	No. of Students	Lowest	Score Mean	Highest
Unskilled	152	26	54	84
Skilled and small business	1121	26	79	108
Professional and big business	100	64	90	110

The way in which socio-economic status tends to be related to social "know-how" is well shown by Table 29, dealing with the knowledge of social usage of adolescents coming from homes of different occupational status. The mean of the last group is above the highest score of the first. Easy social contacts and friendship relations between the first and last groups would hardly be expected.

Such material shows that a person's friends tend to be in his "neighborhood" economically and socially, and in abilities and social interests. But what are the traits which, in any group of adolescents, cause some persons to have many friends and others few or none? Table 30 shows, for adolescent boys, the eight traits most distinctive of the youngsters who were best liked and least liked. The findings might seem trite but are certainly of some value to a teacher seeking to help adolescents develop social acceptability.

Whether the above traits are causes or results of acceptability is not always clear. Thus a boy may be picked on unfairly because of some incidental circumstance, may then not control his temper and may show other undesirable traits which yet further make him unpopular—and he goes into a downward spiral socially. In such a situation a wise teacher or counselor should be of special help. The above data were from adolescent boys.

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[7] Adapted from 43. The test contained such items as "a boy walks next to the curb when walking with a girl."

But it seems not unreasonable to conclude that the general trends of the findings are applicable to both sexes.

TABLE 30.—The Eight Traits Most Making for Acceptability Among Adolescent Boys in a Summer Camp, and the Eight Most Disliked, in Order (the Trait Most Making for Acceptability Is First in the First List and the Least-liked Trait First in the Second) [8]

Traits distinctive of boys who were liked
1. Cooperates and helps willingly
2. Is courteous and considerate of others
3. Assumes leadership in group
4. Is truthful and "aboveboard" in conduct
5. Controls temper in annoying situations
6. Is unselfish with food and belongings
7. Displays resourcefulness and initiative
8. Carries out accepted responsibilities

Traits distinctive of boys who were disliked
1. Shows off, bluffs, boasts, seeks limelight
2. Bullies, is quarrelsome, arouses antagonism in others
3. Thinks he is "picked on," misunderstood
4. Carries grudges, is resentful
5. Uses excuses, alibis, escape mechanisms
6. Domineers, acts superior
7. Fidgets, twitches, bites nails, shows nervousness
8. Overdependent, turns to others for help

What makes for leadership among adolescents? When Boy Scout groups were told each to select a leader, the leaders were found to stand out from the average boy most distinctively in that they were older, taller, heavier, more intelligent, and considered by the other boys to be dependable (37). High school leaders are found to engage twice as much as non-leaders in sports and also in social activities (40). They show initiative, resourcefulness in thinking of things to do, have more hobbies, are ready and confident. Chart 35 shows the relative weighting given different traits of leaders among adolescent girls as rated by 30 camp directors.

There is a little evidence to indicate the possibility of improving ability in leadership. Thus students in a certain high school rated each other in leadership, then were divided into two equal groups paired on the basis of leadership rating. Eleven conferences on qualities and techniques involved in leadership were held for one group but not the other over a period of seven months. A second series of ratings showed the conference group to

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[8] Adapted from (18), pp. 135–136.

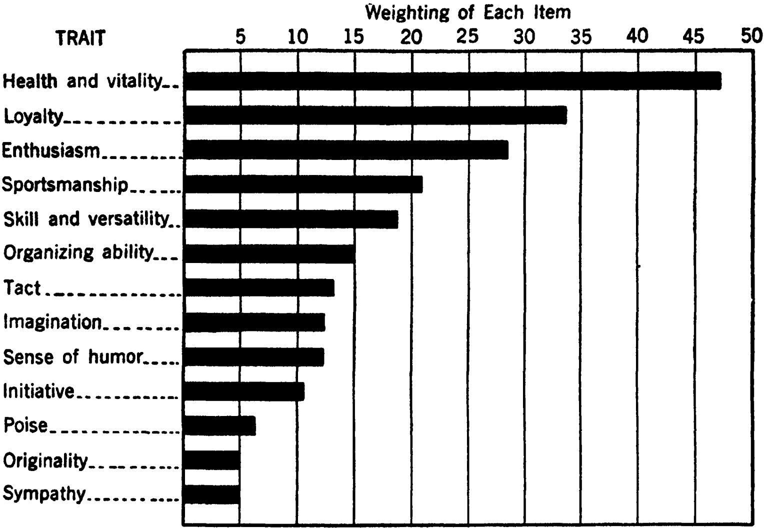

CHART 35.—Ratings by camp directors of leadership traits in adolescent girls. (Adapted from H. E. Stray, Leadership traits in adolescent girls, *Sociol. & Soc. Res.*, 1933, 18:241–250.)

have improved its mean rating over the other.[9] Such a finding takes on added significance when considered in connection with the fact that high school leaders have been found to maintain a superiority on the average in adult life. In fact, leadership in high school is a better basis for prophesying success in later life than is scholarship (39, 15, 14).

The above discussion leaves adolescent social life unattached, so to speak. Really, its center and locus are typically, in a modern American community, the secondary school. The relations of the high school and adolescent social psychology must now be looked at.

THE PLACE OF THE SCHOOL IN ADOLESCENT SOCIAL DEVELOPMENT

As will shortly be stressed, the typical adolescent is trying to escape, psychologically, from his home. But economically and vocationally he is not yet able actually to leave home. He needs a way point. This the modern American secondary school furnishes—and perhaps does it better socially than it does intellectually or vocationally. It provides a place where regularly and with the full approval of home and community he can be away from home, and gives many additional occasions for being away. It affords constant association with other adolescents—going to and from school, in the corridors and classrooms and study halls, and in athletic and social affairs. Class and extra-class activities furnish topics of conversation and foci of interest. Increasingly in modern schools, classes are informal and social and special projects and trips are cooperative social affairs. Over and above the educational procedures and more interesting to both students and community is "school life." This total situation must now be looked at.

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[9] G. A. Eichler and R. R. Merrill, Can social leadership be improved by instruction in its technique? *J. Educ. Sociol.*, 1933, 7, 233–236.

The Staff, the Class, and Adolescent Social Psychology.—First of all it is well to remember that not only are adolescent students markedly social in interest; the staff are also human beings with their own social interests and social problems. Put these two groups together and sundry situations arise.

> Affable, unmarried young Mr. Smith, the physics teacher, is an inevitable object of interest on the part of adolescent high school senior girls who are naturally more interested in males somewhat older than their classmates. And unmarried young Mr. Smith can hardly be totally unaware of these attractive girls.
>
> Miss Andrews, the physical education teacher, is a vigorous young woman who would like to marry, but somehow (perhaps in part because she is somewhat masculine in manner) men of her age have passed her by. Martha is a shy appealing little girl who has not made satisfactory associations with boys. She greatly admires this vigorous, self-confident older woman, who in turn enjoys having someone give her devoted attention. It is very natural that these two should find sundry satisfactions in being together. It is also very understandable that when, at long last, a man became interested in Miss Andrews she found her ever-present young admirer a nuisance, showed this none too tactfully, and left the girl isolated and miserable.

When sex-social interests are thus lively, it is also only natural that they should hold attention over conventional subject matter and that, in fact, much that goes on in a class cannot be rightly understood unless the social undercurrents are appreciated.

> Unusually insightful is the account written by a high school girl of the civics class hour under a young man teacher. She admits that langour and boredom and unpreparedness are a pose in competition with another girl in the class who shows off. By her display of ignorance and appearance of malaise she finally gets the attention of the instructor, who inquires solicit-

ously for her as she rises with elaborate weariness and leaves the class, conveniently and ostentatiously last (52).

Striking indeed may be the contrast between different classes in the extensiveness and naturalness of social experiences. Miss Henry in Spanish gives no opportunity for direct social relationships between students. She asks a question of Mabel or Tom or Jane and they in turn address her. Or they translate, addressing their translation to her, and she in turn, if a correction is to be made, calls upon someone to do so. The students could hardly be more isolated from each other, if each were in a separate stall. Contrast this with what has been going on in home economics. The girls have been planning together the banquet which they are giving for their parents. They are working in committees, and thus each chairman has an opportunity for leadership. The committees have visited stores and found prices of materials. They have consulted with their parents about the program. The youngsters have worked informally together, chattering as freely as they would after school. These school undertakings could hardly be more social and informal if they were neighborhood affairs initiated and carried through by the girls themselves. Such cooperative social projects will be discussed further in a later chapter.

Out-of-Class Activities.—Here are the obvious socializing experiences. Some, adult sponsored and guided, go their decorous way in activities educative and often socially very valuable, though sometimes flat. A club holds meetings where students learn Robert's rules of order, the procedure of a debate or an election, and obtain some poise in speaking to a group. College alumni frequently refer to such experiences in high school and college as having been very useful in preparing them for participation in business gatherings or public affairs. These clubs are more democratic than the typical adolescent crowd. They give opportunities for leadership (if wisely directed) that the more quiet youngsters might not otherwise obtain.

Then there are the assemblies, the games, rallies, dances, and other school affairs. The typical school has a fever of these goings-on. The newspapers feature them. They are town talk. To those at the center of them they are life. But many others, on the outside enviously looking on, begin here a lifelong jealousy of the have-nots for the haves.

Especially are such unfortunate outcomes likely—and likely to increase sour attitudes in the family as well as establish them in the adolescent—if they are tied in with and in part come from handicaps of family status.

Usually there are such relationships. The complex competitive situation often found is well shown in a shrewd "Middletown" high school girl's statement as to factors influencing membership in a leading club: "The chief thing is if the boys like you and you can get them for the dances. Then, if your mother belongs to a graduate chapter, that's pretty sure to get you in. Being good-looking, a good dancer, and your family owning a car all help" (30, p. 216). Causes for leaving high school in Middletown are here relevant. Mothers who said sons left school because they didn't like it finally blurted out that "we couldn't dress him like we'd ought to and he felt out of it" or "They're so snobbish. If you don't dress right you haven't any friends." The chapter in *Middletown* (30) on "school life" is a classic statement of this extraordinary total educational phenomenon.

It must be remembered that the outsiders are many, often a majority. For example, one interesting study of 22 high schools in two states showed that 65 per cent of freshmen boys and 58 per cent of freshmen girls never attend dances, nor do 50 per cent and 45 per cent in the senior year (38). Another investigator found that 8 per cent of senior girls in a large high school had never belonged to any club, team, committee, or any other group, 35 per cent had never belonged to any social group or committee, 30 per cent had been to no dances and the same number to no parties or similar occasions; 15 per cent had had no "dates" within the past month.[10] The matter will be returned to in the concluding section of this chapter.

The Adolescent and His Family

The adolescent, moving as he is into maturity, naturally wishes to find his own place in life. He wishes to develop his acquaintance with the other sex. Both trends involve the possibility of mistakes. It is natural for the family to be anxious, and for the adolescent to be impatient and overconfident.

Persistent Causes of Conflict with the Family.—A first question here is as to the matters about which conflicts frequently arise. Table 31 summarizes an inquiry in which junior and senior high school students were asked to check, on a list of possible causes of conflict, those topics which were causing them serious and distressing conflicts with their mothers.

Very evidently conflicts with the mother which disturb adolescents are extremely frequent. Girls reported about 15 per cent more problems than boys, and younger students reported more than older. Conflicts may arise on a variety of issues, but most of them are primarily social.

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[10] Unpublished material of Dr. Richard Wilkinson.

Table 31.—Matters Regarding Which Adolescents Reported Serious Conflict with Mothers; 528 Cases in Grades 7 to 12

The list was based on analytical study of a series of interviews with adolescents over a five-year period, and covered the important issues which were thus found.

	Percentage	
	Boys	Girls
Clothes and Manners		
Nags about clothes	26	51
Complains about hair	24	26
Fusses about lipstick	0	65
Refuses to buy clothes I like	13	56
Complains about uncleanliness	56	11
Pesters about table manners	75	64
Pesters about personal manners and habits	69	70
Home Relations		
Makes me go to bed too early	31	45
Insists I eat certain desirable foods	82	84
Nags about any little thing	26	66
Talks baby talk to me	33	11
Teases about my girl friends	51	0
Teases about my boy friends	0	66
Holds sister and brother up as model	67	76
Spends most of time away from home	29	78
Tells her friends things I tell in confidence	14	16
Shows favoritism to my brothers and sisters	31	44
Gets angry if I don't spend much time with her	28	35
Talks against father and wants me to agree	8	17
Treats me as if I were a child	5	16
Won't give me a regular allowance	54	52
Won't let me use car	86	71
Relations with Friends		
Objects to my friends	19	40
Objects to my going to dances	0	59
Urges me to make friends of important people	10	13
Insists I go with friends of her choice	20	70
Won't let me spend night with friends	15	43
Interferes in settling difficulties with my friends	20	23
Is cold to friends of mine she doesn't like	20	45
Makes fuss over friends of mine she likes	34	37
Objects to automobile riding at night with boys	66	87
Objects to automobile riding in day with boys	49	66
Accompanies me to parties, movies, etc.	3	30
Insists I take sister or brother	51	82
Investigates places before I can go	15	44

[11] Adapted from (5).

TABLE 31.—Matters Regarding Which Adolescents Reported Serious Conflict with Mothers; 528 Cases in Grades 7 to 12 (*Continued*)

	Percentage	
	Boys	Girls
Relations with Friends (*Continued*)		
Urges me to outdo others socially	0	28
Won't let me go to movies or dances	8	13
Won't let me entertain at home	9	53
School Work		
Won't let me take subjects I want	33	56
Scolds if school marks aren't high	82	86
Urges me to beat next fellow in school	4	13
Miscellaneous		
Objects to my smoking	1	13
Objects to my reading choices	18	33
Won't let me attend church I choose	4	53
Won't let me follow vocation I choose	65	34
Brags about me to other people	50	23
Insists that I be a goody-goody	32	58
Embarrasses me by telling how good I am	50	26
Insists I account for money I spend	80	81
Worries about my physical health	27	59

These conflicts were presumably distressing to both parents and children. The question next was as to what could be done about them. The first step was to present the results of the investigation to a parent-teacher meeting. Much discussion followed, both in the meeting and later in many of the homes, the effort being to come to a better understanding all around. Conferences between adviser and parent, teacher, or child helped in dealing with individual problems. After a year of such efforts at better understanding and adjustment it appeared that the students were better adjusted and happier than before. Parents and children understood each other better. School and home were better coordinated and the school program was made more vital. In short, manifold benefits followed this effort on the part of the school better to understand and deal with problems of pupil-home relationships.

Larger Conflicts of Life Pattern.—Some conflicts cannot thus be handled in straightforward fashion on their merits, however; the total life pattern of parent and child may be involved. Such problems are evidently exceedingly difficult to deal with.

Helen was the large, awkward, easily embarrassed daughter of a divorced and emotional mother. The mother had married impetuously, unwisely, and too young. She was lonely, and she was determined that Helen should not make her mistake. Strict rules were made about Helen's social life; thus she was required to return home earlier than was customary in her group, and her association with boys was restricted. If she rebelled, the mother wept and even became ill. Because the mother had no one else to think of, she lavished affection and counsel upon the girl. Helen never chose her own clothes. She had never been away from her mother overnight. As a result of all this she was losing out in companionship with others of her own age and sex, and had no place in social affairs with the other sex.

Somewhat similar in outcome as regards heterosexual social experience, though the factors were different, was the case of Herman. His family were "good old-fashioned people." Dancing and card playing were taboo. The social life of the average high school youngster was almost entirely forbidden him.

Even more unfortunate is the situation if the youngster comes to acquiesce in or even prefer dependence. Archie's mother was prominent, attractive, vigorous, very fond of her slight, languid son. He was fond of her and found it easy to let her indulge him, do things for him, look after him. In high school he seemed little interested in girls of his own age but enjoyed being in the company of older women; his favorite teacher was somewhat like his mother. He appeared to have formed a mother fixation.

Very different was the case of Irene, whose mother, having had few of the good times she had desired in her own girlhood, tried to give her daughter all these missed pleasures. Attractive clothes, more spending money than the family could well spare, and a pushing into social life that the child sometimes resented led to overstimulation, extravagance, and irresponsibility.

Problems of vocational choice may not only be serious in themselves bu· involve issues of social development. June's mother had given up hope of a career as a pianist to marry. In her daughter she saw the possibility of achievement of her own unrealized ambitions. Lessons and interminable practice were June's lot. Through childhood she was reasonably docile. But her ability to play concert music had little value in adolescent heterosexual society. Her music became more and more a cause of interference with her desire to live her own life. Seeing her plan in danger, the mother insisted all the more on lessons and practice and tried to block off conflicting social activities. Little wonder that to June her music became a hated thing, cause and symbol of her bondage to her mother, and that the girl insisted on going to a college in a distant state to "get as far away from mother as possible."

Clearly the most difficult problems are presented by those families which in some way hamper the adolescent's finding his place in the society of those of his own age. The possessive parent tries to keep the child to herself. An "old-fashioned" parent, a parent of immigrant stock, or a proud parent who has seen better days, stubbornly loyal to his or her own upbringing, may try to keep the adolescent from adjusting to his own time and group. The parent's burden of maladjustment is thus passed on to the child. The parent's own emotional distresses or ambitions may lead to attempts to restrict the youth from living his own life.

Significant in this connection are investigations as to what high school students think most desirable traits in parents. The wish is that parents should take more time to get acquainted with their children, try to understand them, respect their opinions, and not lose temper or scold (30, 41).

ANALYSIS—AND PROGRAM

The preceding chapter closed with a section titled "The Applied Social Psychology of Childhood." What is possible by way of a really practical "applied social psychology of adolescence"? The writers would venture the statement that nowhere else in secondary education are there greater opportunities for a school to develop a distinctive practical program.

Basic Factors in Adolescent Social Development.—Obviously the basic factors here are largely similar to those noted in childhood. But the whole situation is more complex, tense; it is sensed by the adolescent as more determinative for his present happiness and important for his future as a social being than his childhood. Range of individual differences as regards both factors and outcomes is great.

Certain background factors of constitution and physique, and of circumstance, are far more important. A girl's attractiveness or her homeliness or disfigurement, a boy's outstanding athletic physique or his physical weakness or handicap may be determinative of her or his place in adolescent society. Age of reaching puberty may be very important. As has been stressed, the socio-economic status of the family is more important in adolescence than in childhood.

Pervasively important and all too much neglected is the influence of the current American culture, and more particularly of the habits and customs of the local community. In contemporary American life certain forms of competitive athletics have come to occupy a place (in newspaper, radio, and conversation) out of all proportion to their value. Certain types of social activity have similarly received prominence. Standards as to dress, resources for social going about (a car in the family), social habits as (in smoking or petting) come to be set. The total pattern of interest and of way of living is in many respects superficial and futile. It is tantalizing but impossible for a large portion of the average high school group. As will shortly be brought out, schools should attempt constructively to modify the culture patterns affecting them, not simply accept them.[12]

In the second place, even more than in childhood certain social and prestige-giving skills and abilities are important. In contemporary adolescent society it is needful to know how to dance and to participate in certain common sports like swimming and tennis and games like bridge. Prestige-bringing ability in athletics will help greatly; membership-bringing ability in music or dramatics will also be worth while.

Sundry types of social information and know-how are important. When adolescents are given opportunity to ask questions about matters giving them concern, they frequently mention manners. How does one proceed and what does one say in introducing someone or being introduced? When one is with a girl what is the right way to proceed in a restaurant, a theater, or at a dance? What is appropriate dress for different occasions? And how may one be most attractive in dress and grooming? Then there are other matters, affecting relations with the other sex, about which information is greatly wanted. How about sex? Adolescents want honest, straightforward, unemotionalized, adequate information—not vagueness and platitudes. With modern young people the school's choice is not one of informing them or leaving them innocent. The question is: Shall they have information which is adequate and responsible or perhaps inadequate and furtive?

Finally, in this more complex social world of adolescence it is even more important than in childhood that there be adequate and varied social experience. The point need not be labored. What should a school's social program be, in view of all these factors and problems?

Blueprint for a Secondary School Social Program.—The first step in a constructive social program would seem obvious, yet in most secondary schools it is lacking. A record and appraisal of each student's social traits and activities should be as much a part of the school's regular procedures as a record and appraisal of his ability and progress in history or Latin. It is far more important. A record sufficient to locate the most serious problems can usually be obtained rather easily.

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[12] Every teacher should be familiar with material on cultural change such as appears in *Middletown* (30), and on cultural differences as discussed, for example, in Margaret Mead's *Coming of Age in Samoa,* so that she may have some perspective on current American "folkways."

A compilation from lists in the principal's office of membership on teams and in clubs and other groups will probably show many students participating not at all and a few too much. An occasional request that students list groups they belong to and things they do will yield similar information. A check list covering social experiences may serve somewhat the same purpose. Findings that used such a check list in a senior high school class of 211 will show something as to what may be found. Of these seniors just before graduation, 62 per cent had never belonged to any subject club, 37 per cent reported that they had never belonged to any kind of social club either connected with the school or not. In fact, 8 per cent declared that never in their lives had they belonged to any team, club, society, or even a committee in connection with church, school, or otherwise.[13]

In addition to such records of belonging and participation, ratings or other statements regarding social adjustment may of course be obtained from teachers. A "sociometric test" may be given.

From such a quickly made social survey, isolates and other problem cases may be located. Of these, further study must be made. This study should appraise the student as a social being with reference to the factors mentioned above—his assets or liabilities as regards physique and socio-economic status, his social skills and social information and know-how or lack of such social equipment, his experience. His background as regards home and neighborhood and previous schooling, his interests and plans for the future must obviously not be overlooked. And there should be consideration of his personality traits; especially to be kept in mind are those which appear to make for popularity or unpopularity, as illustrated in Table 30 earlier in this chapter.

Thus problems are found and analyzed. What should be done to deal with them? Usually action need not wait until time-consuming studies of problem cases such as were suggested in the above paragraph have been made. The first survey will suggest desirable changes in policy. If a large group in the secondary school are social non-participators and isolates, may it be that opportunities for doing things together are too limited and conventional in nature—too confined to competitive team games and formal social affairs hardly possible for many youngsters? Do hobby clubs or other undertakings need to be introduced to reach these pupils? Will provision for informal dancing at noon or some other convenient time in some room in the school help these socially marginal pupils? How about providing inexpensive both-sex sports like ping-pong and paddle tennis? How about youth hosteling —informal hiking or cycling trips of several days' duration, with night-time stops in inexpensive hostels maintained especially for such groups by kindly middle-aged couples carefully chosen because of their interest in and understanding of young people?

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[13] The form used was the Wilkinson-Pressey Recreation Inquiry, which includes both recreational and social affairs of all types, not merely those connected with school. This last inclusion is important. What a youngster does during vacations and in other-than-school affiliations may be very important for an understanding of his "social psychology."

Such unhurried companionable trips have many values. It need hardly be said that they are healthy, social, pleasant. Much is learned. But there is a special value for adolescents. They are trying to escape psychologically from the home. They like actually to get away from home—really get away overnight. But many have difficulty in doing this.[14] Educational trips and hosteling provide opportunities for such escape which even cautious parents can approve.

Further, a long-time value of these less formal inexpensive social recreations is exceedingly important and often overlooked. Out-of-school youth present the most serious socio-recreational problems of any group. In particular, how may young men and young women find occasion to be together and get acquainted through pleasant common interests? Young unmarried women especially find this a problem. Individual sports like hiking or swimming, games like ping-pong or Chinese checkers or bridge, folk dancing or informal social dancing, hobby clubs may thus serve. These problems continue into middle and later adult life. Thus a typical study showed that 67 per cent of a large representative group of adults belonged to no organization, 78 per cent never went to lodge or club meetings, and 79 per cent did not attend dances (8). The reiterated complaint in a study of adult socio-recreational life recently made under the direction of one of the writers was that the schools did not give preparation in forms of social life which could be continued into adulthood.

Perhaps such a broader approach may bring larger resources to bear on the school-age social problem. The whole community may become interested. For example, in Dowagiac, Michigan, the school made inquiry of young people regarding their desires for leisure-time opportunities. They requested a recreation center for after-school hours with a varied program including ping-pong, billiards, social dancing, a forum for discussion, crafts, and hobbies. The school, a church, a prominent businessman, and the W.P.A. combined to put the program into effect, both school and church furnishing rooms. In Columbus, Indiana, an abandoned school building was made into a club, open to all young people from 9 to 21 or over; four-fifths of all boys from 9 to 17 belonged. Other school buildings were opened after school hours for social and recreational purposes. The school board combined forces with the city recreation department; women's organizations, Rotary, Kiwanis, and Chamber of Commerce cooperated. Sports, hobby clubs, parties, scouting, musical organizations were all fostered. A summer camp was developed five miles from the city, and about half the youth of the city have vacation at it each summer (51).[15]

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[14] A survey of some 300 undergraduate women in the writers' university showed that 8 per cent of them had never been away from home overnight. Two senior women had never in their lives been allowed by possessive mothers to be away from their families, even during vacation. Of these 300 college students, 4 per cent had never been outside Ohio! Even for college students, getting about a bit may be a real adventure and it makes a real contribution to the enlargement of the social self.

A few pages back mention was made of the unfortunate conventionalizing of adolescent socio-recreational life into stereotypes which tend to exclude many in-school and most out-of-school youth. But programs like those described above change the community culture in these respects. Schools can, by shrewd publicity and work through community leaders, thus reeducate a community.

The preceding section stressed the importance of social skills such as dancing, and of membership or prestige-bringing skills as in music or athletics. Increasingly schools and community centers are including instruction in social and folk dancing, and coaching in dramatics and in various forms of athletics for all who wish. Social information and know-how were also listed as important. Many schools provide for discussion of problems of etiquette; home economics classes consider dress and grooming. The better teachers in that field include consideration of problems of home living that involve many of the issues touched upon in this chapter. Home economics classes for boys deal with these same issues from a boy's point of view. As mentioned earlier in the chapter, a survey may be made of the attitudes of each sex toward the other or of child-parent difficulties, and the results discussed by all concerned.[16]

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[15] These socio-recreational programs are mentioned here rather than in Chapter V because it is believed their most important contribution is social rather than recreational. The volumes by Wrenn and Harley (51) and by Bell (4) are well worth reading in this connection.

[16] Quietly, in various ways, help can be given on the various issues involving association between the sexes. Youngsters who hang back from social life because of shame over the "terrible secret sin" of masturbation or distress about menstruation or nocturnal emissions, youngsters who take foolish risks because they do not know any better, a girl who thinks that conception may follow a kiss, and another so vaguely informed as to excite her unduly in all association with boys—all these adolescents need the blessed relief of really

This in brief is the suggested program by which the secondary school might deal with problems in the social development of adolescents. That program should include (1) an appraisal of each youngster's status as regards social development, (2) provision for social experiences suitable for all, and (3) provision that all may learn desirable social skills and needed social information and know-how. Two elements in a desirable program remain for brief mention. What of the school psychologist or counselor? Many adolescents—and many parents—need the calm objective help to calm objective thinking about themselves which such a person can give. The above program has not stressed this type of work because at present many schools seem to find it easier to obtain a counselor to labor with maladjusted adolescents than to develop a program which might have prevented the maladjustment. But the good counselor is also most interested in prevention. If he thus leads in preventive as well as in therapeutic work it is indeed true that "a psychological counselor is a minimum essential in a sound youth program—far more essential, for example, than a math teacher, a janitor, or a principal."[17]

And now the last, almost forgotten item—the regular teaching staff and classes in history and English and math and science. Do they have any responsibility for a student's social development? Most colleges and many high schools seem to think not; the student learns subjects in class, and develops his social abilities and insights in extracurricular activities. In the preceding chapter the "psychological atmosphere" of the elementary school class was judged to be very important. It is less so in secondary school, partly because the student has more teachers and the teacher more pupils, partly because the parent-surrogate relation has now been somewhat outgrown. But the writers believe that in both secondary school *and* college the constructive social program should begin in class. Recent experiments in university classes in educational psychology have shown that acquaintance among students can be doubled and its nature greatly enriched over what ordinarily occurs in the average class, by a socialized activity program in which students work freely together around tables, take trips to schools and playgrounds, and are handled by an instructor who is a practical social psychologist. Surely high school teachers in the pupils' home com-

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knowing what is true. And the newspaper columns of advice to the lovelorn show that they need calm, sensible help in thinking about everyday issues of conduct and mutual understanding involving the relations between the sexes. Here indeed are problems of emotion and behavior aplenty.

[17] Goodwin Watson in *Prog. Educ.*, May, 1941, p. 262.

munity have far greater opportunity to understand and further the social adjustment of the members of their classes. Much of what was said in the preceding chapter about class management applies here. The subject will be returned to later, in considering learning.

SUMMARY

Though development is continuous, the physiological changes of puberty plus change from elementary to secondary school and the changed attitudes of society combine to make the problems of adolescent social life distinctive.

Most distinctive and most important is the shift of attitude toward the other sex from indifference or scorn to great interest. This "achievement of heterosexuality" is vital for emotional health and normal social life. Sundry handicaps may retard or even prevent this development so needful for later normality of attitudes and for marriage. Association with one's own sex goes through sundry processes of readjustment. Problems of maladjustment are frequent.

In the adolescent's process of escape from home the school functions as a way point—an approved place for association with other adolescents, independent of home restrictions. In the school the adolescent finds relations with both staff and class taking on a new piquancy. "School life" is a social microcosm where new social relationships are worked out. But social isolates are frequent.

The adolescent seeks to escape from his home but economically he cannot. Adolescence is thus the friction point between the old and the new generation; conflicts are frequent. There may be larger conflicts of life pattern causing trauma in the life of either parent or child.

Adolescent social development appears to be affected primarily by four factors: (1) Liabilities or assets as regards physique and socioeconomic status; (2) social skill giving prestige or membership; (3) social information and "know-how"; (4) social experience.

A school should first of all obtain a record and appraisal of each student's social status. Its social program should be varied enough to meet the needs of all types of students and should anticipate the needs of out-of-school youth and later adult life. It should reach out into the community and back into the classroom. With such a broad program and a counselor to see that each student's needs are met, social adjustments should be greatly furthered and a real education for social living provided.

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CHAPTER IX

The Growth of Attitudes and of Moral and Aesthetic Standards

If the reader should say, regarding an acquaintance, "I know him," the reference would probably not be primarily if at all to his physique and not very much to his I.Q. Nor would the full implication of that remark be covered if his interest in reading or athletics, his sociability or shyness, and his emotionality were included—though all these things are part of knowing him. Really to know a friend means especially to sense the underlying trends in him—what he favors or opposes, what his ideals are, what are his standards of conduct, and his notions as to what is beautiful and to be desired. The question is as to what the values are in his life; they determine the direction in which his life is moving. The development of these most subtle and most personal and intimate traits remains to be considered. In many respects these are the most important topics in this volume. Least is known about them. The average school does little about them; what little it does do is often so awkward that it influences pupils away from the ideas or ideals it attempts to foster.

It is now well realized that the schools should do much more in these respects. Germany and Italy and Japan (in large part through their schools) have developed fanatical ideas of loyalty to their social philosophies. It is desirable and congruent with our democratic ideals that American schools should develop in American children loyalty to those ideals. But the obligation extends beyond values and ideals which, at a particular time, are obviously endangered or critical. Problems of values come up all the time. Is John's attitude toward his classmates friendly and cooperative or antagonistic and competitive? Is his hero a gangster, prize fighter, aviator, soldier, actor, inventor, or scientist? After dinner does he do his lessons or listen to the radio? Does he cheat if he sees a chance? What are his tastes in music and reading? These are important questions. And they cannot be avoided. Everyone develops his set of values and comes to regard certain things, persons, and ideas favorably or unfavorably. As will be seen shortly, the development of these attitudes and values is part and parcel of the total development and interwoven with the other factors already discussed.

THE DEVELOPMENT OF ATTITUDES AND IDEALS

An everyday occurrence is to consider what an acquaintance's attitude may be toward Russia, the administration, the closed shop, progressive education, Latin, psychology, the football coach, the boy in front of your seat, or oneself. The question is as to whether the acquaintance looks with favor or disfavor upon the country or persons or topics under consideration—whether he would tend to support or oppose. Some attitudes (as toward oneself) may be of great importance to the person concerned, but otherwise of little significance. But most are of broader import; they may be exceedingly broad like attitudes of hostility or friendliness or anxiety or curiosity or conservatism regarding almost anything. As the personality becomes integrated, attitudes tend to become more consistent.

Attitudes may literally be observed in a leaning toward, smiling, or other evidence of favoring or opposing. They may, of course, be shown by favoring or opposing speech. For purposes of investigation, systematic procedures are desirable. Small children may be asked orally what they like or whom they admire. Older children may check, on a long list, people or ideas they favor. Attitude scales may be used. The following excerpt from a scale of attitudes toward teaching may serve to indicate the general nature of such instruments:[1]

> The following is a list of statements about teaching. Place a plus sign before each statement with which you agree.
>
> 1. Teaching is one of the best means of serving humanity.
> 10. Teaching offers exceptional opportunities for making friends.
> 20. Too many teachers like to teach but can't.
> 31. Teaching becomes boresome in a short time.
> 40. Teachers have no future.
> 44. Failures in other lines usually become teachers.
>
> As will be noted, these statements vary from very favorable to very unfavorable. The extent to which a given individual or group favors teaching is indicated by the statements which have been checked in such a series.

In short, various methods may be used to investigate this issue as to attitudes of liking, or admiring, or opposing. The question is as to how these attitudes develop and what influences affect them.

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[1] Adapted from (61), 1934.

Changes as Regards Attitudes and Ideals with Age.—A natural first question concerns changes in attitudes and ideals with age. It must first be recognized that the development of attitudes begins very early. By 8 months a baby shows consistent preferences for particular games or toys. Definite attitudes between sisters are evident by 1½ to 3½ years (46). As early as 24 months boys have been found preferring cars, airplanes, and horses for their toys, whereas girls chose dolls (56). When the child begins school he finds himself in a new world, with new associates, new values, and new codes of conduct. And through reading and other material there, his world is yet more widely extended. The sources of his attitudes and ideals are proportionately more varied. Table 32 is significant in this connection for both school and home.

TABLE 32.—Source of Ideals—Urban Children in Three Cities [2]

	Age					
Source of Ideals	6–8	9–10	11–12	13–14	15–16	17–20
Characters from immediate environment	58	41	32	29	28	27
Historic and public characters	32	49	58	63	62	61
Characters from fiction	2	4	3	2	2	3
Characters from religion	3	2	2	2	2	2
Miscellaneous	5	4	5	4	6	7
	100	100	100	100	100	100

The issue regards persons admired and looked to for ideals. To a small child a parent may be an ideal. Later a popular teacher may be so regarded, and may have a group of admirers who hang about her desk, imitate her manner, and hope to follow her career. An athletic coach, a student leader, a movie actress, a national hero, or a notorious crook may influence youthful behavior. The table summarizes answers to the simple question: "Of all the persons you have read about or seen, whom would you most care to be like?"

Evidently younger children most usually admire someone they know personally. But with increasing age the weaknesses of persons thus known come more to be seen, and historical and public characters have greater influence. It may be added that boys consistently choose historical or public characters more than girls. The slight influence of characters from fiction or religion may well seem surprising.

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[2] Adapted from (38), p. 412; data from D. S. Hill, Personification of ideals by urban children, *J. Soc. Psychol.*, 1930, *1*, 379–392.

What traits do young people admire? Chart 36 summarizes certain results from over 4000 cases from Grade 6 through college, on a simple test consisting of a list of 90 words such as *brave, broad-minded, cooperative.* The directions were that each characteristic which was admired should be checked, and those very much admired double-checked.

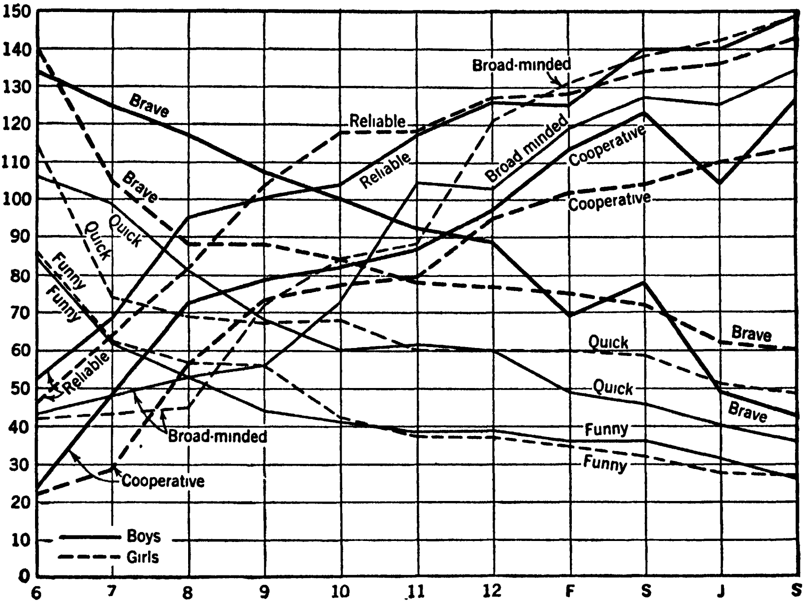

CHART 36.—Changes with age in admired traits. (From unpublished data of S. L. Pressey.)

The lively extrovert virtues of bravery and quickness are most important for pre-adolescents; the superficial ability to be amusing or funny also ranks high. But these traits are less valued with increasing age. Greatest stress comes to be put on such traits as broad-mindedness and reliability and cooperativeness which have to do with ability to live and work with other people.

Chart 37 again shows changes with age, but in prejudice, not in a favoring attitude. The prejudice grows with age and quite clearly is the cumulative result of community influences. Race prejudice appears in the large New York City group investigated as well as in the southern districts. Within a district, however, attitudes may differ markedly. The squares represent small groups, one Negro and one

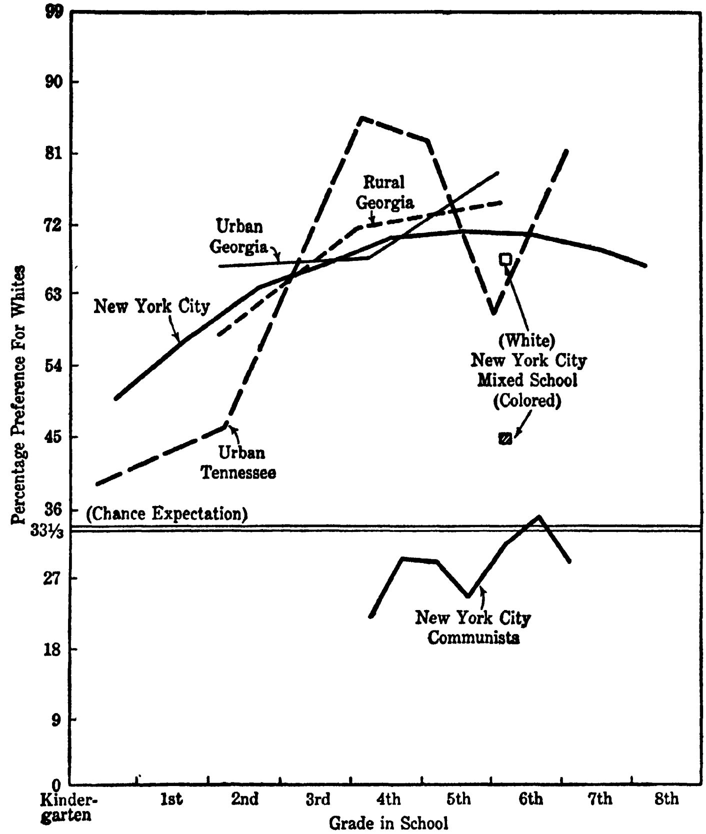

CHART 37.—Race prejudice in different groups, showing that attitudes toward an issue are specific with the group studied. (Adapted from Horowitz [35].)

white, in a New York high school. These groups differ markedly, but apparently the colored youngsters have been influenced by the attitudes of the majority white group; they also have some prejudice. However, the communist children, though living in the same neighborhood and going to the same schools, have an attitude which seems to be a dramatic reaction from the general prejudice, as a result of the distinctive social philosophy of their parents and associates (36).

As dramatic evidence of the various and often striking ways in which adolescence may bring crises as regards ideals and conduct, certain diverse data have been combined in Chart 38. Religious conversion, first criminal activity, initial radical political activity—all these phenomena reach their peak at almost exactly the same age.

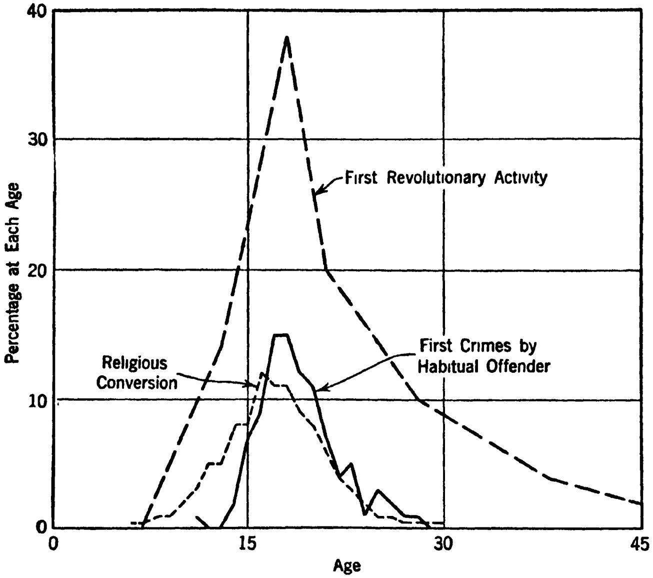

CHART 38.—Frequency of crises of attitude and character in adolescence, as shown by frequency, at different ages, of religious conversion, first revolutionary activity of Russian political leaders, and first crime of habitual offenders in England. (From data of Cyril Burt, as summarized by Shuttleworth [65], Fig. 370, and E. T. Clark, *The Psychology of Religious Awakening*, Macmillan, New York, 1929.)

Obviously the factors at work in the development of attitudes and ideals must be diverse indeed, to produce such diverse results. Not simply growth in abilities and interests and emotions, but a great tangled complex of influences from home, neighborhood, social and economic circumstance, and the total culture must all be operative. The difficult next task is to try to analyze and weigh these various factors.

Biological Determinants of Attitudes.—Though attitudes should be thought of as learned, very important biological factors are operative. From infancy on, such factors as energy output and liveliness, emotionality and emotional expressiveness—in which individuals may be observed to differ greatly—are of much importance. Health is important. The vigorous, active infant tends to develop positive aggressive attitudes, but the less energetic or sickly baby tends to be shrinking and hesitant. One baby is good-natured; another is irritable. Any of these conditions may continue, cumulatively influencing attitudes; or a change in health and vigor may bring a change in attitudes. Malfunctioning of the glandular system may make one individual lethargic and another hyperactive. And within the range of the normal, glandular differences affect personality.

Physical size, strength, and attractiveness may affect attitudes and ideals in various and often very important ways. A big strong boy and a puny one are likely to develop different attitudes toward almost everything as a result of this elementary fact, and different ideals also. The big boy becomes overly confident and perhaps a bully, and a famous athlete may be his ideal, while the other youngster may regard an athlete with wistful admiration or "sour grapes" jealousy. An ugly birthmark may determine the whole attitude system (in fact, the whole life) of a sensitive girl. The color of a child's skin may be similarly determinative of the attitudes of everyone toward him and so of his own attitudes and ideals. There may be constitutional differences between the sexes such as greater aggressiveness on the part of the male, and of course society builds up a very different set of attitudes and codes of conduct and ideals for each sex. Innate ability affects attitudes and ideals in multiple ways. Dull and bright children are likely to have extremely different ideals. Several investigations have agreed in showing that intelligent individuals more often than dull have liberal attitudes on social questions. Many of these points may seem obvious, but all too often teachers fail to take account of them in dealing with children.

TABLE 33.—Parent-Child Correlations in Attitude [3]

	Church	War	Communism
Mothers—sons	.57	.45	.58
Mothers—daughters	.69	.43	.49
Fathers—sons	.64	.45	.54
Fathers—daughters	.64	.43	.62
All siblings	.59	.36	.47
Mothers—fathers	.75	.43	.57

Attitudes and the Home.—Similarly obvious but nevertheless not to be left unmentioned is the fact that the home is of outstanding importance in determining attitudes and ideals. For instance, it has been found that brothers and sisters reared in the same home showed a positive correlation of .32 on a scale of attitudes toward other nations, whereas other children reared in different homes but who had been in the same school environment with the siblings for about ten years gave a correlation of nearly zero. Table 33 shows certain correlations within the family group.

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[3] From data of T. M. Newcomb and G. Svehla in (56).

The influence of the family is complex and various. The child may accept the parent's attitude because he knows no other, or as a matter of loyalty to the family; perhaps he upholds it vehemently if it is questioned. The home may enforce the pattern of attitudes expected by the community. Such influences may be important in childhood beginnings of race prejudice; thus one investigator found that in a small Tennessee village one of the most frequent causes for a white child's "getting a whupping" was playing with Negro children (35).

Parental attempts to force acceptance of their attitudes may cause revolt and angry flaunting of a contrary view, however. Even in infancy a baby may develop feeding problems if forced to consume certain foods. In adolescence such revolt is common. And many parents find it difficult to recognize that, as their children grow older, greater freedom should be allowed. One investigator developed scales for measuring the attitude of parents toward adolescent freedom, and found that children from homes where such freedom was approved relied more, and more wisely, on their own judgment (68).

As the young person grows older, other attitude-forming influences become increasingly strong, and there may be conflict and adolescent tenseness. Table 34 shows how complex the total attitude-forming situation may become.

Socio-Economic and Cultural Influences upon Attitudes and Ideals.—Quite clearly the revolutionary attitudes and ideals of these young Russians were the product not only of their homes, but much more of the total condition of affairs in the Russia of their time—the hardships and repressions, the ideas of their associates, and the events going on about them. But events and conditions now are having their strong and often very immediate effects on the attitudes of the young people of this country. As shown by Chart 39, response may be immediate and marked as to the surrender of Belgium or Russia's defense.

The method of gathering the data was simple and straightforward. At various times from 1939 into 1942 college undergraduates were asked to indicate, on a mimeographed blank, their like or dislike for various nations there listed.

TABLE 34.—Number of Communist Leaders Whose Ideas Could Be Traced to Each of the Following Influences [4]

Family	
Influence of revolutionary parents or grandparents	8
Sacrifice and idealism of father, or his revolutionary ideas	17
Father's harshness, immorality, or narrowness	9
Sacrifice and idealism of mother, or her revolutionary ideas	12
Influence of older brother	8
Hardships of family or injustice of landlords against family	15
Hardships of parents	9
School	
Repression of school authorities or expulsion	14
Influence of fellow students	45
Influence of teachers	13
Other	
Revolutionary literature, books, and periodicals	66
Racial discrimination	5
Cruelty of czar's officials or jail experience	9
Hardships of workers	15
Influence of fellow workers	20
Influence of general revolutionary group	10
Direct influence of exiles or contact with these in jail	3
Participation in direct revolutionary activity itself	3
Revolution of 1905	15
Assassination of Alexander II	3
October revolution of 1917	3
Witnessing strikes	5
Experiences while a resident abroad	2
Disillusionment about religion and church	3

Change of attitude with economic change has been well shown by an investigation in which, in 1923 and again in 1933, students were asked to check what they liked on a long list. In the depression year favorable attitude of college men toward business, businessmen, salesmen, and bankers had dropped an average of 18 per cent as compared with the prosperous 'twenties (13).

Economic disadvantage may develop and maintain prejudice. Thus of 58 members of a mob responsible for a race riot 19 were unemployed, 13 were common laborers, and 11 had police records; jealousy of a racial group which was competing with them, and use of this group as a scapegoat, seemed to be the important factors in this demonstration of race prejudice (15). Such attitudes in adults are quickly taken up by the children with whom they are in contact, as are also antagonisms between economic groups. One of the writers well re-

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[4] Adapted from (20).

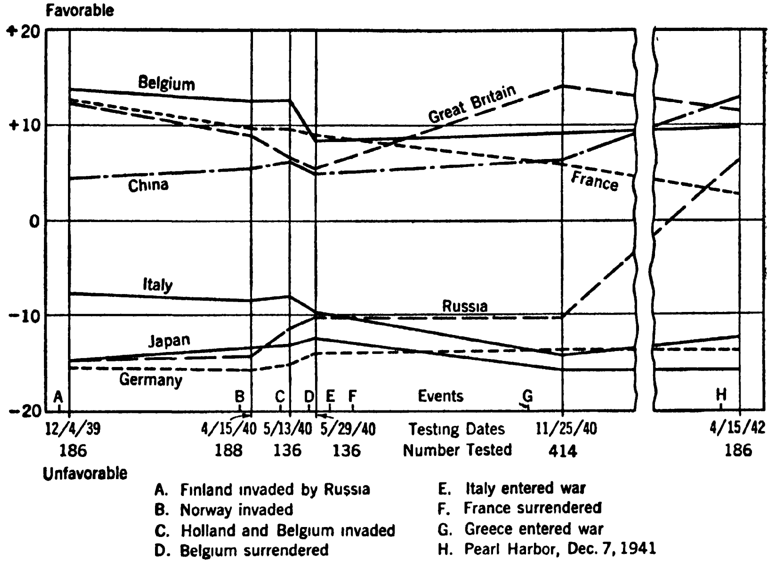

CHART 39.—Attitudes toward different countries, as affected by international events. (From unpublished data of R. Kuhlen.)

members the supercilious attitude assumed by his boyhood associates toward "the South-Siders" because the adults of his neighborhood regarded the other side of town as a rather run-down section and the people who lived there as not so well educated or "refined." And how the South-Siders, both adults and children, resented that attitude!

Gross economic handicap markedly affects attitudes even in nursery school, as is illustrated by reports from schools serving children of migratory workers and factory hands. One small boy "felt keenly the stigma of living in a tent." Another "was antagonistic toward everyone." A third was very shy but after four months "associating with other children in nursery school where there are people of a happy frame of mind, has changed his attitude" (74).

Most important and most subtle of all determinants of attitude is culture—the total complex of beliefs and values and accepted points of view of a nation, class, or community. Even very young children feel such influences acutely. For instance, a small 6-year-old boy told his little sister angrily that he did not understand when she spoke to him in Danish, although his immigrant parents used that language at home exclusively. The point was that two "American" playmates were present and he did not want them to know that he came from a "foreign" home; even this small boy felt the community attitude toward immigrants. Even young children maintain such attitudes. Thus a hullabaloo on a school playground was found to be caused by a group of little girls dancing about Maria and chanting, "She's a Wop! She's a Wop!" Maria fiercely denied it, shouting, "I'm an American!" but finally fled into the school building (4).

Within a racial group, different classes have their own cultures. A 15-year-old lower-class Negro girl explained in a matter-of-fact way to an investigator that "everybody was always fighting in her family," and told about how when her mother hit her father over the head with a skillet the children all "laughed plenty." The father had a "girl friend" and the grandmother a "boy friend"; the girl said, "It don't make no difference to me 'cause all the rest (of the adults she knew) got 'em." Several of the girls she associated with had had illegitimate children, but this fact seemed to make no difference in their social status in this neighborhood. Asked her strongest wishes, she mentioned a gold front tooth and a sweater. But a middle-class colored girl of the same age in the same city has a family bound together by strong affection and living in a home they own. The father is a loyal husband, devoted to his wife and children; the mother is active in church affairs and says proudly of her family that they "never have any fussing or fighting." The girl is allowed to go out with boys only if the parents "know the boys, and their families are good friends of ours." Although the father is sick and out of work, the parents would not "think" of letting the children leave school. The girl's strongest wish is to go to college. The differences between the folkways of these two groups, belonging to the same race, in the same city, are indeed striking (18).

Differences in the attitudes and ideals appearing in different national cultures may be equally striking. Thus a study of the occupational preferences of American children showed that in prestige the banker ranked first, followed by the college professor, doctor, clergyman, lawyer; last came the coal miner, ditch digger, street cleaner, etc. But in Russia first places went to the peasant, aviator, doctor, coal miner, and last places to businessman, banker, then street cleaner (19).

Influence of Reading, Radio, and Moving Pictures upon Attitudes and Ideals.—One of the dramatic findings of research regarding attitudes has been the demonstration that movies do affect them, and that the effects last over a considerable period of time. Chart 40 is illustrative.

A scale on attitudes toward the Chinese was given to a large group of high school students, and the next day a moving picture favorably depicting Chinese life was shown. Attitude was again measured the day after the picture was shown; also in one group five months after and in another group nineteen months after. The distinct shift toward a favorable attitude was clearly exhibited. And 62 per cent of the immediate change still remained after a year and a half.

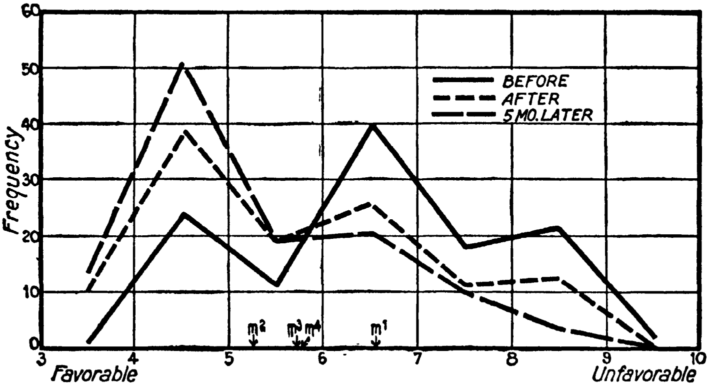

CHART 40.—Attitude of school children toward the Chinese before, immediately after, and five months after seeing the pro-Chinese film, "Son of the Gods." (From Peterson and others [59].)

What is seen in print tends to be believed and has an effect on attitudes and ideals which is sometimes startling, even with intelligent people (for instance, college students) and under relatively unfavorable circumstances, such as publication in the editorial column of a student paper and thus not likely to be considered very authoritative by students.

For instance, fifteen editorials favorable to a politician from abroad who was visiting the United States, and fifteen unfavorable editorials were "planted" in the *Daily Iowan*. Certain of these editorials were given to students as part of what they were told was a "long-time investigation of the psychology of reading." Half of each class read favorable editorials and half unfavorable ones, along with all the other editorials in the paper, neither group knowing what the other was reading. One section read fifteen of the planted editorials, a second read seven, and a control group read none. Pre-tests showed no knowledge of the visitor, but end tests showed 98 per cent of the students who had read the favorable editorials to have become favorably biased toward him, whereas 86 per cent of those who read the unfavorable matter were prejudiced against him. Seven editorials were as effective as fifteen. Chart 41 shows how clearly the groups had become separated.

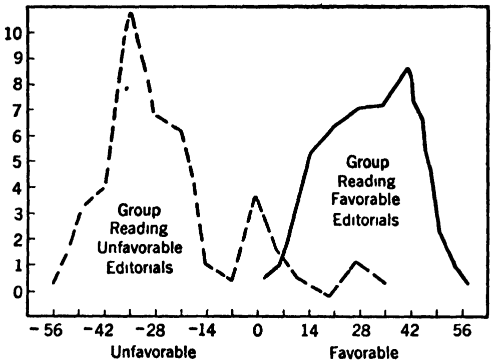

CHART 41.—Scores on a test of attitude toward a visiting politician, as affected by editorials unfavorable to him. The second group read favorable editorials. (Adapted from Annis and Meier [2].)

There is some evidence to indicate that the radio is more effective than printed matter in influencing opinion—and a speech delivered in person is most effective of all, especially if by an individual of great prestige (76). In short, everyone is subject to a constant barrage of attitude- and ideal-forming material in movies, radio, print, also in advertising, cartoons, gossip—a constant flood of matter such as never before beat upon young minds anywhere. All the more need that the school should try to influence its pupils toward attitudes and ideals which are sound, and help them to think clearly in all the confusion.

Emotional Dynamics Involved in Attitudes.—In the chapter on emotions it was pointed out how aggressive attitudes might have their origins in frustrations. In several places it has been mentioned that an individual or a racial, socio-economic, or other group may become a scapegoat victim of antagonism as a result of frustration. Favoring attitudes as a result of emotional experiences making for status or other satisfactions have also been mentioned. Hostile attitudes may be easily caused by unpleasant experiences, and such an attitude may spread to include all members of the disliked person's race, party, or class. Such emotional backgrounds of attitudes and ideals must now be further touched upon. The topic can best be dealt with by examples.

The attitude of Chris toward his teachers was for the most part one of mistrust and antagonism: "Most of the time I used to enjoy tormenting the teachers." This attitude toward authority was understandable in view of his history. When a child of four, Chris had been placed by his mother in an orphanage. His childhood was made miserable by the woman in charge there, by a foster mother, and by certain teachers. His poor schoolwork also hurt his self-esteem. It might be said that his attitude toward the teachers had three reasons in what might be called emotional logic. They represented authority, with which he was chronically in conflict. They were the ones responsible for the school tasks in which he failed and lost prestige. And if there was evident conflict between him and them, his difficulties might be blamed on this conflict rather than on him.

Raymond had a peculiar attitude of indifference toward his college freshman course in history, and did poor work in it. He chose physics as his major subject, though he seemed to have neither genuine interest nor ability in this subject. He seemed indifferent to the other sex. Raymond was an only child who had been dominated by his mother and was very dependent on her. Half-consciously he resented this situation but could not break away from it. However, since his mother wished him to major in history he did poorly in that subject, and he chose a very different subject for a major—as a symbol of his feelings.

At the beginning of her high school sophomore year, it seemed as though Lois had taken up camping almost as a religion; she tirelessly expounded on the philosophy of outdoor life and the code of fair play and self-sacrifice. These were her ideals. Then all these ideas and ideals were dropped, and after a period of confusion she turned with almost equal devotion to art. How was all this to be accounted for? Lois was a comparatively neglected younger daughter and during her freshman year of high school had felt left out in school as well as at home. Then at summer camp she formed a deep attachment for a young woman counselor; she thus at last found emotional security and affection. Her ideals were a product of this situation. But after a while the counselor shifted her attention to another girl. Lois was bitterly disillusioned, turned for solace to art, and gave her allegiance to the understanding art teacher.[5]

A college girl made something of a display of her radical attitudes on almost every issue, was known as an agnostic, and smoked more than was good for her. Her father was a clergyman, and these were reactions against the attitudes and rules of conduct which were forced on her by the circumstances of her home. A second girl's conservatism was essentially a defense of her prosperous, self-complacent existence. A third girl's kindly attitude and her ideal of service which led her to choose work with crippled children as her career had their origin in her own crippled condition. The truculent attitude of a class of Mexican high school pupils in Arizona was easily understood when the teacher learned of the racial discriminations of which they were victims; they resented her because she represented the dominant group, and her efforts at friendliness they interpreted as an attitude of condescension on her part.

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[5] The above examples are briefly summarized from (79).

In short, attitudes and ideals can be adequately understood only when their emotional as well as their educational, socio-economic, and cultural origins are considered. The emotional background is what gives them their vigor—and is usually most difficult to get at.

Attitudes and the School.—How can a school affect pupils' attitudes? An obvious way is to put before the students material for that purpose. Research to date shows that they can, with an ease which is somewhat frightening, be thus influenced.

Even a single brief talk obviously intended to influence opinion may markedly affect the attitudes of so intelligent and critical a group as college students. For instance, at the time when the Japanese activities in Manchuria were much discussed, a Chinese graduate student in this country made up an attitude scale on this matter from statements made by Japanese and Chinese indicating their respective points of view. This scale he gave to a total of 762 American college students. Two weeks later some of these students were given a pro-Japanese talk, some a pro-Chinese talk, others a neutral lecture, and a fourth group was left as a control. Then all groups were again given the scale. Table 35 shows that brief propagandist talks can clearly influence student opinion.

Attitudes can be shifted and reshifted. For example, some Indiana high school students were found by means of an attitude scale to be favorable to

TABLE 35.—Shifts in Attitude Test Scores of College Students Who Were Subjected to Pro-Japanese, Pro-Chinese, and Neutral Information or Propaganda. (The higher the score, the more favorable the attitude toward Japan)[6]

Nature of Group	No. of Cases	First Mean	Second Mean	Difference
Control (no propaganda)	243	50.8	50.0	−.8
Given pro-Japanese propaganda	136	47.9	54.8	6.9
Given pro-Chinese propaganda	145	48.3	41.5	−6.8
Given neutral material	238	46.9	48.7	1.8

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[6] Adapted from Chen, William Keh-ching, The influence of oral propaganda material upon students' attitudes, *Arch. Psychol.*, No. 150, April, 1933.

trade unions; they scored 14.6 on the scale. A paper filled with propaganda against unions was read to these 70 students and the scale given again; the score fell to 11.2. But next day another brief statement favoring unions was read; the median attitude scale score following that was 15.6. Two months later the attitude score was 12.5—or something of a middle ground (8). College courses have been shown to affect attitudes. Thus students were found to be measurably more liberal in their attitudes on various social and economic problems at the end of a course in sociology than at the beginning.[7]

But the school can do more than thus directly, and by verbal means in the classroom, influence students' attitudes and opinions. It can artfully bring about situations which will operate in this way. In so doing it may not only somewhat superficially influence the individual student; it may affect group attitudes and the group "culture pattern."

For instance, a Minnesota city has a Festival of Nations, for which the schools prepare dances, songs, posters, and foods representative of the various lands from which the different immigrant groups in that state have come. Climaxing the festival is a gala evening in the municipal auditorium, with booths displaying articles from these countries, and entertainment showing all the many fine elements in these various cultures. Adults and children of immigrant stock thus come to take pride in their origins, rather than feel ashamed. In a Los Angeles junior high school a series of community evenings prepared by children for their parents brought such results as an Italian-American mothers' club. Youth hosteling trips bring young people from country and city and of different nationalities together; each group finds that there are "swell guys" in all the others. By such means are democratic attitudes and ideals developed (4).

Trips made by a class or other group may greatly operate to change and broaden attitudes. For example, a group of eleventh-grade students made a nine-day trip into Pennsylvania and West Virginia. There they visited mines, steel mills, homes, company stores, and welfare agencies, and talked with workers, company officials, and others. The trip was preceded by two weeks of planning and followed by five weeks of follow-up study. What were the effects on these adolescents? One boy wrote to an unemployed miner with whom he had become acquainted on the trip, "We got more out of our trip than we could have from a year of ordinary school, in seeing the problems of this country firsthand." His mother said, "The boy got more out of this experience than from anything that has ever happened to him before." Said another mother of her daughter, "She matured six

[7] E. Salner, H. H. Remmers, and C. L. Morgan, Affective selectivity and liberalizing influence of college courses, *J. Appl. Psychol.*, 1933, *17*, 349–354; and Liberalism and conservatism of college students as affected by the depression, *School & Soc.*, 1935, *41*, 780–784.

months in those ten days." Results on a scale of social beliefs given before and after the trip showed the shifts in attitudes. The test consists of such statements as "If we attack intelligently the problems of poverty and unemployment we can eliminate them" and "Unemployment and poverty are inevitable in any social system." The number of liberal statements a student marks that he agrees with is his "liberal" score, and the marked conservative statements his "conservative" score; statements marked uncertain make up the "uncertainty" score; if liberal and conservative items of a pair are both marked this scores an inconsistency. The scale includes items on democracy, government regulation, labor, race, nationalism, and militarism. As a result of the trip, liberalism went from 65 to 80, consistency from 60 to 75, and uncertainty from 24 to 13. Clearly the attitudes of these young persons had become more liberal and better integrated (5).

In the third place, schools can try to understand the emotional dynamics in back of attitudes and ideals, and act accordingly. Thus Chris (mentioned a few pages back) found security in the continuing relationship with a counselor and gradually became less suspicious and hostile in his attitudes toward adults. The art teacher directed Lois' interest in art toward stage design, and soon she found companionship and belonging in the student dramatic group, becoming chairman in her senior year. She thus has increased her status both in school and at home. Her strained and artificial idealism and moralizing attitudes have been replaced by broader interests and better balance.

All through the school years, attitudes and ideals are thus forming and changing as the result of many influences, some of them in the school. The school *can* be a very constructive influence in such ways as have been mentioned above, if it has the understanding and will make the effort. And if it can work cooperatively with home and community, then it can accomplish a great deal.

THE DEVELOPMENT OF CHARACTER TRAITS

Troublesome indeed are problems of discipline to most young teachers. The school has certain rules as to what pupils should and should not do in class and on other occasions for which the school is responsible. But some pupils seem to take a perverse delight in breaking these rules. Inevitably, sooner or later, some yet more serious problem occurs: Helen is suspected of filching money from teachers' purses, John is before juvenile court for stealing an automobile, Maria is pregnant, two high school seniors are discovered to be the holdup men who have recently terrorized the neighborhood. Why do young people do such things! In contrast Josephine is always considerate and rules-abiding, and big good-natured Jim—what a satisfaction he is. He can be depended upon to help in desirable projects, and he has been known quietly to nip pranks of his more mischievous classmates in the bud. What are the influences which make such various character traits appear? Are there ways in which such developments may be guided and controlled?

The Forming of Character in Childhood and Youth.—With very young children, what is right or wrong is a matter of specific acts approved or reproved by parents. A child of 7, asked why cheating is wrong, very likely will say simply, "It is naughty" or "It is forbidden." But as he grows a little older he increasingly wants reasons for things and he learns to rationalize his rules of conduct—usually quite obviously in terms of what a parent or teacher has said. Thus a boy of 9 is likely to condemn cheating on the ground that "It is not fair play" or "It doesn't do any good; one can't learn that way." One can almost hear echoed the parent or teacher who thus put in terms of his own ethic of equity or of pragmatic worth this rationale of a principle of conduct. Usually the rationalizing is in terms of stock phrases.

Gradually, however, maxims wear thin. Children become more sophisticated, noting that adults often pay only lip service to these maxims but do otherwise, and noting also that some of these rules don't always work well. Certain developments take place which are well outlined in Chart 42, which summarizes the answers of 1386 young people between the ages of 11 and 18 to the question, "Are there situations in which lies are necessary?"

A flat authoritarian condemnation of lying on moral grounds (exemplified by an 11-year-old girl's simple comment, "It's a sin to tell a lie," is not the most common at her age, and gradually declines in frequency. Most usually mentioned in later childhood is the adult-sponsored warning of unfortunate outcomes for the prevaricator, as illustrated by the 13-year-old girl who said, "You may get away with it at the time but you will come out wrong in the end." However, with the increasing social sensitivity of adolescence such generalizations are seen to be unsatisfactory and lies are declared to be sometimes sensible and even ethically desirable. Thus a 15-year-old girl considers justifiable an episode when "a salesman comes to your door to sell you a vacuum cleaner and you don't want to be bothered so you say you have one already in order to get rid of him quickly." And a boy of the same age says, "Yes, lies are sometimes necessary, as when a boy wants to get a job and lies about his age, because his mother and father are dependent on him."

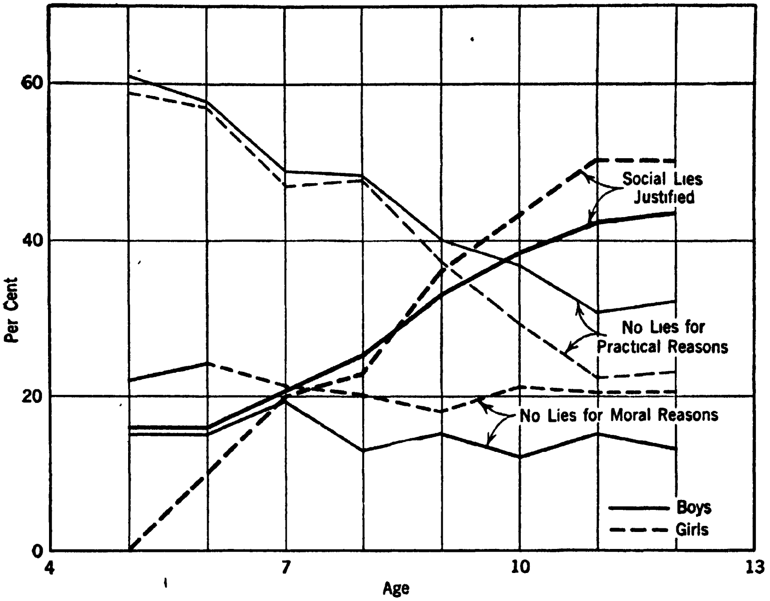

Chart 42.—Percentage of children at various ages giving various types of answer to the question, "Are there cases in which lies are necessary?" (Adapted from B. E. Tudor-Hart, Are there cases in which lies are necessary, *J. Genet. Psychol.*, 1926, 33:586–641.)

Chart 43 further exhibits changes in moral points of view from childhood to late adolescence. Such socially offensive traits as being conceited are increasingly condemned. From moral taboos of the older generation such as smoking and card-playing the younger generation rapidly frees itself. Attitudes toward divorce shift markedly; it will be noticed that the most marked changes for the girls occur from high school to college. For many, this means getting away from home; before that time, girls apparently are less able than boys to become independent of home points of view.

The test consisted of 90 words such as are shown in the chart, and the directions were to check once those things thought wrong, and twice those thought very wrong. The chart shows number of checks per 100 cases of each sex at each grade. Thus in the sixth grade 100 boys made 151 checks against smoking; this might have been due to 51 boys checking smoking as wrong and 50 double-checking it as wrong. But 100 college seniors totaled only 12 checks of even mild condemnation. The girls are even more liberal in this matter; only 6 even mildly condemned smoking as morally wrong (though of course they may not have smoked themselves).

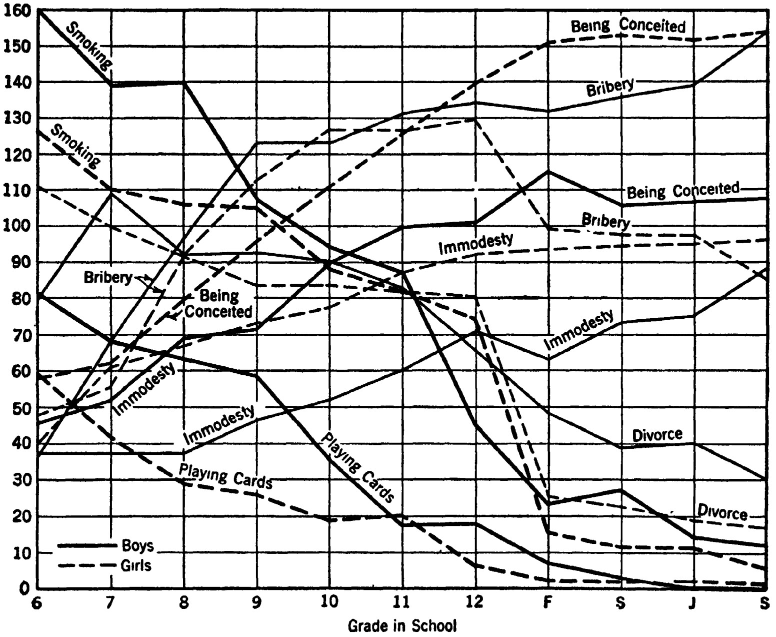

CHART 43.—Changes with age in things thought wrong. (From unpublished data of S. L. Pressey.)

The above data show what young people say they think right or wrong. What do they do? As mentioned a few paragraphs back, children's ideas of right and wrong begin with specific experiences as to what acts are approved by elders and also by playmates. Problems of conduct will arise in proportion as a youngster gets in situations where he does not know approved ways of accomplishing what he desires. Since his desires, his knowledge, and the situations in which he finds himself all change as he grows older, conduct problems change with age also, as is shown in Chart 44.

Temper tantrums are most frequent in the youngest years; gradually the child learns better than such blind striking-out at his world, and becomes increasingly sensitive to others' disapproval of such behavior. As boys become increasingly free-ranging and independent about their neighborhoods and find companionship in gangs, boys in poor neigh-

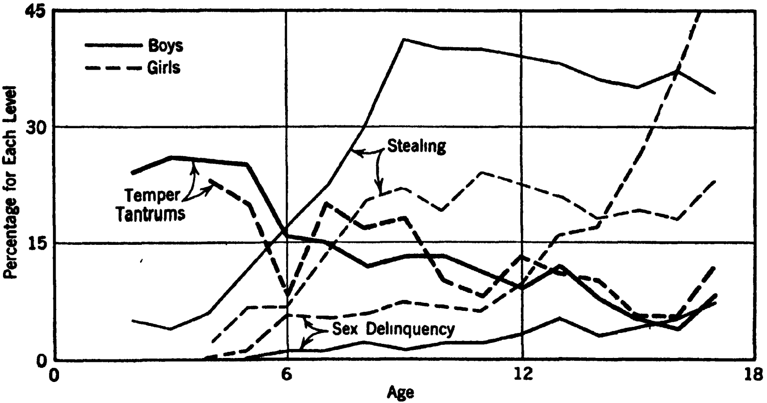

CHART 44.—Percentage of children at each age presenting certain conduct problems, among 4454 cases brought to the Illinois Institute for Juvenile Research during the years 1923 to 1927. (Adapted from L. Ackerson, *Children's Behavior Problems,* University of Chicago Press, Chicago, 1931.)

borhoods are likely to steal. The graph shows a rapid increase in theft in middle childhood; but theft is less common with the less active, less organized girls. However, the girl's different physical constitution, her earlier maturing, and the different attitude of society toward sex delinquency in girls as compared with boys all bring about a rapid rise in sex problems among girls in their middle teens. Clearly problems of conduct develop and change as part of the total processes of development discussed in this book.

Chart 44 has to do with delinquent individuals and serious misconduct. But what about growth in matters of less extreme conduct, and with average or superior children? Chart 45 shows evidence on this matter. Certain very ingenious and practical conduct tests have been devised for the measurement of character traits. These tests give children an opportunity to cheat in marking their own test papers, to disregard a time limit, to keep change wrongly given them, or otherwise to be dishonest in an everyday fashion; the pupils have no idea they are being tested and seem to be in no danger whatever of being caught, but actually the investigator has ways of finding out what each child did. Traits like helpfulness and self-denial were measured by "tests" such as inviting children to come to school a half-hour early to make scrapbooks for the children's hospital, the score being the amount of time which the children gave to this work. Such tests are bits of real life.

Chart 45 shows increase in score on a battery of seven such character tests for 532 children having I.Q.'s of 130 and above, and for a group of 533 unselected or average children. The curves rise with age. The intellectually superior children score higher, 85 per cent of them being above the means for the average children. And though some bright children are little rascals, in general there is a positive relation of character with ability. There are from four to seven times as many feebleminded in delinquent groups (delinquents who have been caught!) as in the population at large (55). Hartshorne and May (32) found a correlation of .50 between intelligence and honesty in school.

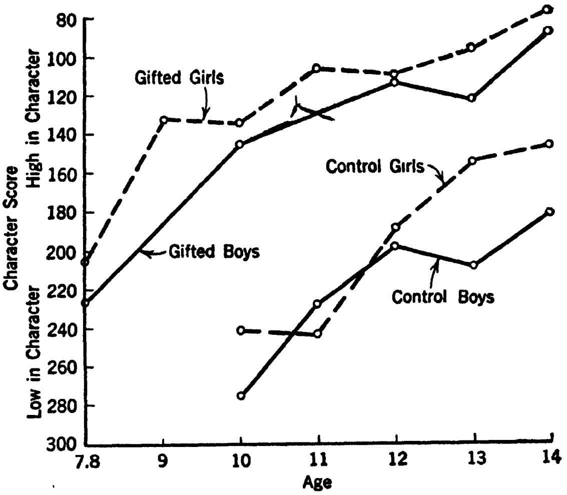

CHART 45.—Mean total scores of gifted and unselected children, by age, on seven character tests. (From Murchison [55], after Terman.)

But if character traits develop as do other traits, presumably sundry factors affect this development and may permit its control. These factors must now be considered.

Factors Affecting the Development of Character.—As suggested above, intelligent children are more likely to know what is considered right or wrong and to conduct themselves accordingly—or at least to keep out of trouble—than dullards—a conclusion neither astounding nor profound. In general, delinquents average somewhat below "normal" non-delinquent children in physique and health, a fact that is also not surprising in view of the poor homes and neighborhoods from which most of them come. Further significant here is an investigation in which some hundred delinquents were compared with non-delinquent siblings, all pairs having grown up in the same general family environment (33). The most significant findings of this study are summarized in Table 36. Presumably a sick or handicapped child is more likely to be irritable, frustrated, and unable to compete by fair means than a normal sibling.

TABLE 36.—Differences in the Developmental Histories of 100 Delinquent Children and Their Paired, Non-Delinquent Siblings, Including Only Differences of 50 Per Cent or More [8]

	Delinquents	Non-Delinquent Siblings
Much worry during pregnancy	10	3
Very sickly during pregnancy	13	6
Cross, fussy babyhood	14	5
Difficult toilet habit-training	31	13
Much underweight in early childhood	12	5
Many or severe illnesses	28	8
Severe head injuries	5	0

That a young person's home greatly influences the development of his character is a fact so well recognized that it need hardly be mentioned. Delinquents are likely to come from homes that are poverty-stricken, and in which a parent or sibling is immoral or delinquent, or which is "broken" in some way. Thus if a home is crowded so that youngsters are almost literally pushed out into the street, the father has deserted and the mother is away all day working, or a foster parent is antagonistic to a child, conduct difficulties are very likely.

Of a group of children brought before the Children's Court in New York, only 25 per cent were living in a home with both parents; 20 per cent were with neither parent; the whereabouts of at least one parent of 27 per cent of these children was unknown (60). A comparison of boys in institutions for the delinquent and public school children showed only 55 per cent of the parents of the first group living together as compared with 81 per cent of the second; 32 per cent of the delinquents had only one living parent as compared to 15 per cent of the public school children; the parents of 10 per cent of the delinquents were divorced as compared to 3 per cent of the public school youngsters. Unstable home conditions were found in the case of 45 per cent of 660 runaway boys.

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[8] From (33).

That delinquency is more likely in poverty-stricken groups need hardly be stressed. In the New York group mentioned above, only 27 per cent came from families which were supported by the parents' income; 71 per cent were on some form of public relief or private charity. The New York Crime Commission found that the more severe the offense, the more likely was a criminal record in the family. "Thus 43% of the families of truants, 50% of the families of juvenile delinquents, 66% of the families of misdemeanants and 83% of the families of felons had previous criminal records" (60, p. 96).

That there should be a relationship between moral knowledge of children and of their parents would be expected. One investigation showed the correlation of scores of children on a moral knowledge test with scores of their parent to be .54, with friends .35, with club leaders .14, with public school teachers .06, and with Sunday school teachers .00 (32). If friends are in different classrooms the correlation is .23, whereas if they are in the same classroom the correlation is .66! Presumably the teacher may after all have some effect; but doubtless the class here has its influence—various factors act cumulatively to bring about this last correlation.

The very young child knows no standards of conduct other than those of the tight little group consisting of the family and a few family-chosen friends in which he has spent practically all his life. But increasing age brings membership in other groups which have their own standards. To achieve status in these groups, a youngster must conform to these standards. In proportion as there is conflict between the standards of these groups and home or community standards there will be trouble.

A special but important instance of this fact is the frequency of delinquency in many minority groups. Thus 70 per cent of some eight thousand delinquents in New York City had foreign-born parents (3). It must be emphasized, however, that the crucial factor here is social conflict, not race or nationality; under more favorable circumstances, children of foreign-born parents have been found to have a lower delinquency rate than children of parents of "American" stock (69). As indicated in the preceding section, a school can do much to help children of minority groups; teachers who have such children in their rooms should be sensitive to their problems and help them become acclimated to American culture.

Sometimes the conflict between standards of a youth group and community standards may be acute indeed. A slum gang may have toughness as an ideal, status being achieved by successful criminality.

Petty shoplifting becomes a game, and failure thus to contribute to the gang's success is scorned as a weakness of "character." But the group standard may as effectively influence conduct in desirable directions. For instance, there is experimental evidence that Boy Scout training can increase trustworthiness.

> In one experiment the leader frequently spoke of the importance of trustworthiness, used slogans such as "A Scout is trustworthy," complimented boys who had shown trustworthiness, had group contests where the trait was important for success of the group and hence a factor in the status of an individual in the group. Simple shrewd practical tests of trustworthiness were given at the beginning and end of the three-months' experiment. For instance, a boy would be given too much change in making a purchase or loaned an article to be returned next day; he would receive credit on the test if the change and the article were returned. Boy Scout groups given such training improved 20 per cent more on the tests than Boy Scouts not thus trained (72).

A youngster's standards of conduct are thus determined, in one way or another, more than anything else by the standards of the groups of which he is a member. If there are discrepancies or conflicts in the standards of these different groups or in their relationships to the adult society in which they all exist, difficulties arise. An adolescent is especially subject to these stresses; he is still in the family but is also a member of his adolescent crowd and looking forward to adult status. Hence the piling up of personality crises as shown in Chart 38; criminality, religious feeling, and devotion to a social cause all are most likely to come to a head then.[9]

Clearly difficulties of conduct are likely in proportion as the code of one or more of these groups is in conflict with others. As has been indicated above and will be reiterated in the next chapter, socio-economic factors are very important; the highest rate of juvenile delinquency is found in dreary slums with their crowded homes and crowded streets, agglomerate mixture of races, and poverty preventing legal satisfying of wants. Very significant is the fact that with such improvement of conditions as more playgrounds and better housing, delinquency rates go down. For instance, in Glasgow, people in a slum area were moved out, better apartments built, and these same families moved back into the same area. The principal of the school in that area reported, regarding 400 rehoused children, "advance in respect to health, cleanliness, nutrition, intelligence, discipline, clothing, punctuality, and sociability" (78).

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[9] The nature and intensivity of these crises will quite clearly depend on the nature of the codes and the extent of their conflict. Margaret Mead's *Coming of Age in Samoa* (47) and *Cooperation and Conflict in Primitive Societies* (48) well show how very different group codes and group conflicts may be in different cultures.

The Development of Character in the Individual.—Preceding pages have indicated the general trends in development of character, and the factors affecting that development. It has been reiterated throughout this volume that such general understandings are not enough; to understand any individual it is necessary to see how various factors have operated *in him.* What seem, superficially, to be the same influences may bring very different outcomes. The following double case history shows how, even in early childhood, this can be true.

Perry and Ernest were twins, though not identical in physical characteristics nor indeed in their behavior. They were only six years old, but in these few years Perry had become a notorious bad boy. He was a truant from school, had repeatedly stolen, once attempted to set his home on fire, often ran away. His parents complained of impudence, disobedience, and temper tantrums, and his teachers considered him extremely troublesome. In striking contrast, Ernest was an even-tempered, obedient, thoroughly well-behaved "model child."

The developmental histories of the two boys showed some marked contrasts. Ernest was born first and without instruments, but Perry was delivered by instruments during a difficult labor. He had been a fussy and crying baby. On a recent psychological examination Perry made an I.Q. of 82 and Ernest 95; but the examiner remarked that he was unable to hold Perry's attention and he felt the boy could make a higher score. Personality differences were marked. Perry was exceedingly restless, impulsive, a show-off—especially proud of the grinning picture which had appeared in the newspapers after one of his escapades. In contrast, Ernest was quiet, amenable, pleasant, easily amused at home and fond of staying with his mother.

The home environment of the two boys was externally the same, and none too good. There was sufficient money for needs, but the father took a flyer now and then in the real estate market, traded houses frequently, and had gradually been shaken down from a decent neighborhood to one that was crowded, noisy, and tough. The parents were vehemently incompatible and frequently quarreled. There was constant disagreement about discipline; the mother charged her high-tempered husband with whipping his children too severely, whereas he said she was incompetent and too lenient. More significant was the father's contrasting attitude toward Perry and Ernest. Of Perry he said, "I can't bear to have him touch me. I would rather have a snake around me than have him."

Perry talked freely of his delinquencies, revealing many that were heretofore unknown. He gave in plainest language the vile epithets his father called him, and also the equally unkind terms his parents applied to each other. He showed much feeling about all this, said that he was going to hit his father "right on the chin" some day. It came out clearly that Perry felt extremely insecure in his family relationships and that he greatly craved recognition and affection. In contrast, Ernest was very sure of himself and well satisfied with things as they were. In speaking of his brother to the psychologist, he priggishly boasted, "I am the good boy." [10]

How can these differences between twins as yet only 6 years old, living in the same neighborhood and in the same home, be explained? Physically the boys seemed about equally sturdy; however, Perry may have suffered a head injury at birth. His great restlessness and impulsiveness might be a product of some obscure physical condition. A frequent characteristic of delinquents is hyperactivity, restlessness, and a craving for excitement which seems physiological—though emotional thwartings and dissatisfactions may conceivably bring on the condition. Perry may have been less intelligent than Ernest; but in view of the examiner's comments about the unsatisfactoriness of the test, not much can be made of this factor.

The reader may well and rightly feel that the roots of Perry's misconduct sink into the miserableness of the continual family strife around him. The parents were vehemently incompatible, often quarreling, accusing each other, threatening divorce. The broken home is a favorite place to lay blame for misconduct. Evidence has already been given in support of this conclusion. But this case illustrates the yet more important fact that the conditions which cause a home to be broken usually are the really important facts. Discipline which is lacking or erratic or too severe, uncertainties and irregularities in way of life, and lack of security and affection for the child—these are the influences which may lead to delinquency, and they may be stronger in a home racked with strife than in one which has been broken.

However, there remains this crucial question: Why was Perry incorrigible while Ernest was even too good? Differences in health are of uncertain importance. They were twins; both lived in the same house in the same neighborhood and knew the same discords at home. Nevertheless (and here is the important point), psychologically the home was not at all the same for the two boys; in fact, it was almost opposite. Ernest found there approval, security, status, and affection, but Perry was rejected by his parents, especially by his father. He was fearful, insecure, frustrated in his desire for affection and status. His restlessness, running away, setting fire to his home, resentment toward parents and teachers are all understandable as belligerent outcomes of his frustrations. His delinquencies bring him attention and publicity and hence a certain status he does not know how to get otherwise, and his thefts permit him to treat other youngsters and so obtain status with them. He is friendly and frank with the psychologist partly because he is flattered by her attention and partly because she is about the only friendly adult he has known. Such very human emotional factors are likely to be found in the background of problems of conduct if they are studied persistently and keenly enough so that factors so subtle can be reached.

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[10] The above is a case study adapted from (33), pp. 95–97. The cases are extreme, but they are selected because they show in striking contrast what happens more obscurely to many other youngsters. Parental rejection seems often a very important factor in delinquency. Another investigator (58) compared the behavior problems of 75 children who had been rejected by their mothers with other children of about the same ability from the public schools. Of the rejected group, 40 per cent were disobedient to parent or teacher as compared with 23 per cent of the controls, 32 per cent stole as compared with 1 per cent of the controls, 17 per cent were truant as compared with 2 per cent of the control youngsters.

Influencing the Development of Conduct and Character.—In the preceding pages, what suggestions helpful to a teacher in dealing with problems of character development most stand out? Certain ones by now doubtless seem obvious. Good health is likely to make for good nature and good adjustment. Youngsters of good ability know better how to conduct themselves in accordance with society's rules, and have less need to act otherwise, than those more dull. Good homes in good neighborhoods present fewer characterological hazards than do environments less favorable. All these facts are by now obvious indeed, but so easily forgotten in emotion-arousing conflict with a pupil on a conduct problem that they must be mentioned. Otherwise the teacher may punish the child and aggravate the problem rather than reach the cause and help solve it. The first suggestion, then, is that such background factors affecting character development be not forgotten, and be made favorable so far as that can be done.

If John's conduct has developed in undesirable fashion, the first question may well be whether inadequacies as to health or abilities or home or neighborhood may be major causes. The chief responsibility for such stresses lies outside the school. But the locus of difficulties of these types may be right in the classroom. The cause of an epidemic of misconduct in a certain school one week in May was a defective ventilating system that made the building almost insufferably stuffy. A sixth-grade boy's persistent rule-breaking was his "protest strike" against arithmetic standards he could not meet. In nursery school it has been experimentally shown that a room too small or equipment too meager or an inadequate program of things to do causes conflict and conduct problems among children; the same sort of difficulty may appear right up through the educational system even into the graduate school. Not only dissension in a home, but also dissension in a school staff may affect pupils' behavior.

In the second place, there needs to be good sense regarding standards of conduct on the part of all concerned, avoidance of conflict between groups as to standards so far as possible, and calm understanding of issues. For instance, when a child goes to nursery school some conflicts with other children are inevitable, and it is desirable that the child should learn to hold his own. Overemphasis by a parent on the wrongness of conflicts may either prevent the youngster's maintaining himself in his group or lead him to early discount of adult standards. A large group of junior high school teachers put whispering first on a list of undesirable traits in their pupils. Presumably a socialized school program would have permitted reasonably free communication among the children and thus prevented conflict between sociable child nature and unsocial conventions as to desirable conduct in school. A certain senior high school (as mentioned in an earlier chapter) asked its students to list the most serious conflicts as to desirable conduct between themselves and their parents. The results were discussed with their parents, and finally in a joint meeting. Certain compromises and understandings were reached which greatly reduced the number of such conflicts, clarified standards of conduct on the part of all concerned, and decreased the number of episodes of clear misconduct. Character education should consist of such cooperative thinking-through of problems of conduct (and of attitudes and ideals as discussed earlier in this chapter), rather than the memorizing of maxims or incitements to virtue and warnings against evil-doing.

A most elementary dictum of common sense regarding the development of desirable conduct is that such conduct should become early established as habitual. To do a chore every day, to be on time at school, to abide by the rules of a game, not to filch another boy's pencil or his arithmetic answers—these can be taken for granted habits like passing to the right or saying "Hello" to a friend. They can be established as habits by simple procedures for habit-forming to be discussed later in this book. A major contribution of a teacher to the development of desirable conduct is the habituation of her pupils in such behavior. But habits are specific, and children tend to think in specific terms. Thus honesty *is* bringing home the right change or not copying from another's paper, rather than any more generalized trait. Character tests have shown that a child may cheat in school but not in games, or in one school exercise (drawing a maze supposedly with eyes closed) but not in another somewhat similar (scoring his own arithmetic paper). Of a group of several hundred children, only three cheated in anything like a consistent way, and only a few others were consistently honest.[11] Only in later childhood do any generalized ideas of honesty appear, and is consistent moral behavior guided by them. To help young people develop and work out in their own conduct such ideas in such a common-sense fashion as suggested in the paragraph above is a vital further step in character education. But these general concepts and ideals must emerge as common elements seen in a great variety of concrete situations and so must have their origin in habits of right behavior. If the concrete experiences are of successful deceit, ideals of honesty can hardly emerge; more likely are "ideals" of successful dishonesty.

A third point never to be forgotten is the importance of the influence of the social group of which the individual is a member. For instance, children in the same classroom are likely to behave similarly with reference to a particular classroom honesty situation. The correlation of all members of a given class in one series of tests was found to be .60. Friends in the same classroom were likely to show the same type of honesty behavior (the correlation between friends in the same class was .73), but the correlation of friends in different classrooms as regards honesty was only .16. In one notable instance where a class was not homogeneous in its conduct, the teacher had been ill and the classroom morale had been lost. The development of class and school morale is a major educational responsibility. As was seen in the chapter on the social psychology of the school years, even a child group has structure; the form of leadership exhibited by the teacher affects the way the children behave in subtle ways; the morale of a class group is a complex product of many influences. Much more is known now about these matters than a few years ago. The teacher should use this knowledge in her efforts desirably to develop the character of her pupils.

Finally, each person's conduct and character are a product not only of influences somewhat general and overt but also of feelings and compulsions often hidden and manifest in strange ways, as illustrated by the twins described above. For real understanding of the forces forming an individual's character, insight into such dynamics of character formation are necessary. If a teacher can gain this insight and such understandings as are summarized above, it may well be that she can mold the characters of her pupils more than their intellects.[12]

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[11] Characterological inconsistencies are of course not confined to children. College students show analogous anomalies of behavior. They may cheat in one class but not in another, or cheat the street car company but not the paper-boy, their conduct in each instance being a product of an exceedingly complex background of habits, attitudes, and elements in the particular social situation involved.

THE DEVELOPMENT OF STANDARDS OF TASTE

Here is a fascinating sequence of growth: from a small child's singing in the sun to the soul-stirring Choral Symphony of Beethoven; from incoherent crayon drawings on the wallpaper to the cool, sure lines of a Rockwell Kent etching. A baby newborn cannot tell one color from another. But soon he begins to respond to the pretty, bright mass that is a person, to the songs that lull him to sleep. And not long afterwards he asks for stories, and tells them himself, and sings the songs he has learned and those he makes up. Later on he has the "lead" in the school play; he furtively writes a poem; Edgar Guest is the greatest of poets, and Petty is the modern Michelangelo. Soon he may go further—may discover the too-brave lines of Browning, the ethereal and weird El Greco, the finished grace of Mozart. He buys his clothes, his house, his books with discriminating taste; he lives a life not unacquainted with beauty. Thus runs a hasty "literary" preview, or biography, of the intriguing growth which is now to be examined with more care and more deference to carefully garnered fact.

Aesthetic Growth in Childhood.—There is no more convincing evidence of the development of aesthetic abilities than the actual artistic creations of people of different ages. Below are a number of songs written by children from the nursery school through junior high school ages. The beginnings were spontaneous, growing out of the play interests of the very young child; gradually a consciousness of artistic purpose becomes evident until we see in the song of the junior high school boy considerable literary (and musical) merit. Only the words of the songs are reproduced here, though they all have musical accompaniments, taken down by the teacher in the early years and actually transcribed by the students in the later years.

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[12] Back in 1914 Thorndike remarked that "morality is more susceptible than intellect to environmental influence. Moral traits are more often matters of the direction of capacities and the creation of desires and aversions. Over these education has greater sway, though school education, because of the peculiar narrowness of the life of the schoolroom, has so far done little for any save the semi-intellectual virtues." (*Educational Psychology,* vol. 3, p. 313.) With the far greater knowledge of attitudes, character traits, and emotional dynamics available now, much more in these respects should be accomplished.

Nursery School: "Balloon, balloon,
Up in the air."

This little bit of refrain, quite lyrical and appealing in tune, was sung by Kathryn, age 3, as she drew a picture of a balloon brought to nursery school by one of the boys.

Kindergarten: "Bunny do you brush your teeth?
Sure I do! Sure I do!"

This was a spontaneous working together of a story about a bunny and a project in health habits.

First Grade: "See us write our names,
See us write our names,
All the children at the board
See us write our names."

Third Grade: "Wind mill, wind mill, twisting twirling,
Do you grind the corn and wheat?
Wind mill, wind mill, creaking turning,
Do your work so we can eat."

By the third grade the children are able to write their own music as well as to sing it.

Fifth Grade: "We are the vikings, bold and free,
Who love to sail the northern seas,
Our gallant bark glides over the waves
No kings or earls can make us slaves!
We are the vikings, wild and fierce,
Who conquer all the western seas,
Our gods will guide us all the way,
And to Valhalla go the brave."

Junior High: "Out on the shining river Yang-tze-Kiang
A junk boat sails bound for the China Sea
Low she rides in the tawny yellow water
Heavy with her load of fragrant tea."[18]

Here is an example of poetry written by an eleventh-grader:

Youth

"I must laugh and dance and sing,
Youth is such a lovely thing.

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[18] From *Creative School Music* by Lillian Mohr Fox and L. Thomas Hopkins, copyright 1936, by special permission of the publishers, Silver Burdett & Company, New York.

Soon I shall be old and stately;
I shall promenade sedately

Down a narrow pavement street,
And the people that I meet

Will be stiff and narrow too,
Careful what I say and do,

It will be quite plain to see
They were never young like me.

When I walk where the flowers grow
I shall have to stoop down low

If I want one for a prize;
Now I'm just the proper size.

Let me laugh and dance and sing,
Youth is such a lovely thing." [14]

The development of aesthetic ability, so evident in the songs presented above, is dependent upon two closely interrelated factors: growth in physical and intellectual abilities and growth in experiences. Even in very early childhood, definite evidences of feeling for several aesthetic values appear—values which are rather generally recognized as being fundamental in all aesthetic endeavor. Balance, rhythm, unity, are such values.

The experimental technique used in one study of very young children is interesting, for language handicaps had to be overcome. Building blocks, such as would be familiar material to most children, were used. The experimenter would present to the children two "houses" or suchlike, built of simple arrangements of a few blocks. One of these would be balanced and symmetrical, the other unbalanced and presumably unaesthetic. When the children were asked to copy one of the buildings with their own set of blocks, they more frequently chose to copy the balanced model. Though individual differences proved to be great, the experimenters concluded that it was evident beyond all chance expectation that balance in tridimensional design is preferred to unbalance as early as the pre-school level (17).

Chart 46 shows growth in certain phases of ability in music. The curve for responses to music which might be called "socio-emotional" (such as dancing and other spontaneous gestures in keeping with the

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[14] From Hughes Mearns, *Creative Power,* Doubleday, Doran, and Co., 1929, p. 1. By permission of the author and publisher.

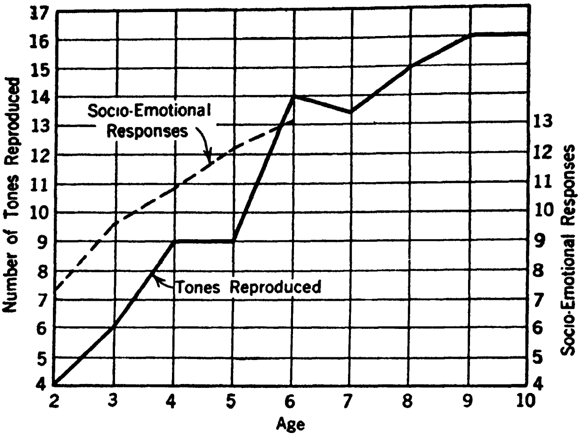

Chart 46.—Increase of musical sensitiveness and ability with age, as indicated by (a) ratings on socio-emotional responses to music (dancing, rhythmic gestures, etc.) and (b) number of tones and half tones reproduced. (Adapted from A. T. Jersild, Music, in N.S.S.E., *38th Yrbk*, after Christianson.)

mood and rhythm of music) closely parallels the curve for growth in ability to sing from the ages of 2 to 6.

In reading over the songs written by children presented above, one is caught by the very definite evidence of feeling for rhythm. Even the simple little fragment about the balloon has a lilt to it. Later, in spite of such inconsequentials as bad rhymes, one recognizes this swinging, rhythmic pattern. The fifth-grade production achieves a unity of ideas and much variety; by the junior high school level there is the more mature unity of tone and feeling in the whole poem. These poems do not simply become longer with the passing of years; there is undeniably a great increase in aesthetic worth.

It is evident that in the early stages of development the child must be given an opportunity simply to grow. The ability to draw, to keep time to music, to sing, or to dance requires a rather high degree of acuteness of perception and of fine muscle coordination, both of which are dependent on maturation. For instance, in a test of ability to keep time to music, out of a possible score of 400, 2-year-old children scored 84, 3-year-olds 109, 4-year-olds 159, and 5-year-olds 192. And a significant but often disregarded characteristic of such growth was evident in these experiments. Growth in the ability to keep time to music can be speeded up by training, even in the very early years. But it is most essential to recognize a supplementary finding—that a group which had received no training, but which was allowed simply to grow, caught up with the trained group a little while after the period of training had been completed. Thus is brought into focus again the importance, for the teacher, of the slow process of maturation. There are two implications: (1) It is grossly inefficient to force learning before the child has the maturity needed in that learning. (2) It is shrewd teaching to be alert to the quiet yet vital changes occurring as children grow in order that materials may be presented when they most meet the needs and abilities of a child pushing eagerly out into his world. Thus at an early date, specific training in beating rhythm is wasteful; an opportunity to respond to and become interested in much good music appropriate to the age of the children seems indicated (38).

So much for the elementary developments in literature and music. There is a similar growth of rhythm in design and of unity in composition in children's drawings. Evidence of rhythm in drawing appears at a very early age, even before definite purposes or objectives in drawing can be noted. Even the random scribblings of a child take on a certain rhythmical pattern. Later, drawings which only a little while ago were aimless and incoherent begin to show a unity and cohesiveness, a centralness of intent, a recognition of relationships which was all but absent from early attempts.

Thus elements essential to later aesthetic development appear at a very early age. It is not until somewhat later, however, that actual artistic creation becomes possible. This of course is due in part to the need for learning simple technical skills. Certainly one reason why little Mary struggles so desperately and with so little success at the piano is that her hands simply cannot do what her ambition and her fond mother demand. At the age of about 3, much of the time children spend in learning to draw is devoted to mastering that baffling instrument, the pencil or crayon. As a rule, at this age there is no readily discernible purpose in children's drawings. The youngsters are not drawing anything, they are just drawing. If a child is asked what his picture represents, he may often be evasive or noncommittal, or he may give a title which is soon forgotten and replaced by another (30).

Of course the range of the abilities as regards sensitiveness to rhythm, form, and compositional unity is very wide in childhood as in adult life. And each child seems frequently to have a characteristic and fairly consistent pattern of these elements in his creations. For example, some children will draw "action" pictures whereas others will draw "static" pictures. Each successive step in development will, as a rather general rule, show evidences of this trait (53). This tendency to conform to certain patterns may be associated with such basic personality determinants as temperament, but it is also interesting to note the similarity here between learning in art and learning in any other area.

The mere mention of the word personality with reference to art and aesthetics in general will doubtless scare up a prevalent notion—that there are "artistic types" and, say, "practical types" of people—the notion that artists are "long-haired men and short-haired women." This concept seeps down through the school and has its counterpart in the belief that artistic children are more effeminate and somewhat more sissy than are children who are not interested in art. A study of college students which compared them on art tests and personality tests revealed no correlation between artistic inclination and personality (though it should be recognized that both measuring instruments are probably insensitive to fine differences). A more satisfying attempt has been made to throw light on this problem by carefully observing the playground activities over a period of months of artistic children as compared with non-artistic children. On playgrounds where there was little or no equipment, no differences were apparent between the groups. But on playgrounds which were well equipped, the artistic children engaged less in physical and social activity and more in play involving equipment than did non-artistic children. It seems that artistic children get more satisfaction from working with materials than do non-artistic children, and are therefore somewhat less boisterous (22).

The children who wrote the songs at the beginning of this section were doubtless superior artistically. When the work of such children is compared with that of artistically inferior children, it is at once evident that the former are much more alert to their worlds, much more aggressive in getting ideas from various sources, much more original, than are the latter. In Table 37 data are presented which show the sources of ideas found in the drawings of certain artistically superior and artistically inferior children. The superior children drained their books, pictures, and magazines for ideas, whereas few in the inferior group used these rich sources. Though both groups had traveled about the same amount, the superior group brought back many treasured memories which they incorporated in their drawings, whereas the others might as well have stayed at home for they used hackneyed and stereotyped materials.

While elemental feelings for rhythm, form, and unity are maturing, skill is being gained in the use of tools for artistic production, and

Table 37.—Sources of Graphic Ideas Found in 137 Paintings of 4 Artistically Superior and 5 Artistically Inferior Children, Ages 3–7 [15]

Source of Ideas	Number of Times Present Superior	Inferior
Books, pictures, magazines	20	5
Movies	2	0
Local physical environment	13	15
Immediate environment (events preceding)	18	12
Stereotyped objects and forms	1	15
Travel [a]	17	2
Unknown, not easily identifiable, composite	3	14
Purely imaginative construction	5	0

[a] Both groups were equally well traveled.

alertness to source materials is increasing, a further aesthetically essential development is occurring, though usually at a somewhat slower tempo. It is rather generally agreed that values in art and music and literature depend not so much on the subject matter or the mere content of the story as on the way in which these are presented. Thus photographs can record with meticulous fidelity "what is there" but may have no artistic structure, originality, or real meaning. Standards of taste begin surely to develop when children show some first awareness of these qualitative elements in art and music and literature—and in houses and clothes and other matters of everyday living. Intimations of such conscious evaluations may appear as early as 9 or 10 years of age. For instance, a third-grade girl chose one picture because it was "so blue and peaceful," and a fourth-grade boy said, in explanation of his liking for a picture, "That patch of yellow up there just ought to be there and it is" (52). This conscious recognition of aesthetic values is rare at early ages; indeed it is often lacking throughout life. Thus to most adults it is perhaps not unfair to say that in movies "the plot's the thing," and skillful execution or deeper meaning within gross limits a matter of inconsequential significance. That some children do show appreciations like those hinted above is warrant for the hope that a more effective art education might bring many more to do so.

Chart 47 shows, in general, what eighth-grade children prefer in poetry, best-liked quality being first. The liking for obvious sound effects, commonplace subject, and obvious humor is what one might expect.

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[15] Adapted from (30).

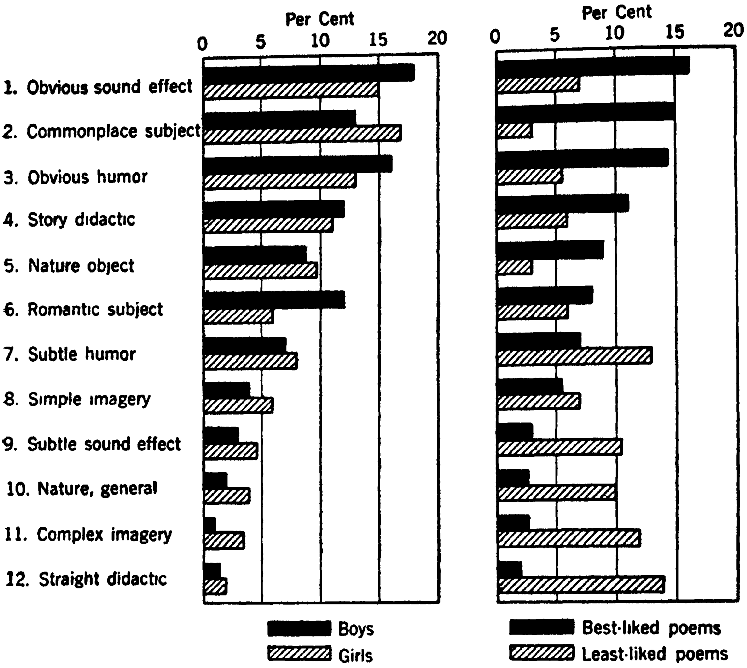

CHART 47.—Characteristics of poetry preferred by boys and by girls, and of best-liked and least-liked poems, as indicated by the percentage of total choices from 120 poems made by approximately 330 eighth-grade children. (Adapted from Kangley [40].)

That certain types of aesthetic discrimination develop slowly, and in many people very little indeed, the data next to be considered show well. Sensitivity to merit in poetry might seem hardly susceptible to investigation. However, in a well-known study just that was done by a simple and ingenious method. Thirteen admirable stanzas of poetry by famous poets were first chosen by the investigators, who then themselves wrote three variants of each stanza; one variant was very sentimental, one matter-of-fact, and one rough as to meter. Each page of the test consisted of four such variant forms of the same verse; the students taking the test were told to mark what they considered the best and worst stanzas on each page. The following sample gives a stanza by Amy Lowell[16] with its variants; for the convenience of the reader these are labeled, but of course they were not in the test.

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[16] Reprinted by permission of the publishers, Houghton Mifflin Company.

A (matter-of-fact)

Sea Shell, please sing me a song
Of ships and sailor-men;
Of strange kinds of birds and trees
On the Spanish Main:
Of fish and seaweed in the sea,
And whatever creature there may be,—
Sea Shell, please sing me a song!

B (original)

Sea Shell, Sea Shell,
Sing me a song, Oh please!
A song of ships and sailor men,
Of parrots and tropical trees.
Of islands lost in the Spanish Main
Which no man ever may find again,
Of fishes and coral under the waves,
And sea-horses stabled in great green caves—
Sea Shell, Sea Shell,
Sing me a song, O please!

C (sentimental)

Tender, tender Sea Shell,
Wilt thou sing me, please
Of thy happy, happy home
Neath the tropic trees?
Ah, the coral islands!
Ah, the wondrous fish!
For such a song I'd give thee, dear,
Whate'er a Shell could wish.

D (metrically damaged)

Sea Shell, I ask you will
You sing a song, please.
All about the ships and sailors
And the parrots in their tropical trees.
The islands I have read about on the Spanish Main
That no one will see again,
The fish and coral under the wave,
Sea horses that have their stables in caves;
Sea Shell, I ask you will
You sing a song, please.

A student's score was the number of pages on which he voted for the original stanza as best. Table 38 shows scores made by pupils from the fifth grade into the graduate school. Since the test consisted of thirteen pages each containing four passages, an average score of 3¼ could be obtained simply by guessing. Elementary school pupils averaged little better than that; only in the junior and senior years of college was the median two-thirds right. Evidently such literary discrimination develops only gradually, at least under present methods of instruction. And, as usual, individual differences are striking. For instance, one high school senior made a perfect score, while one graduate student in English scored only one right!

TABLE 38.—Number of Right Choices of "Best" Version for Each Grade or Group; Series X* Shows Median[17]

No. of Right Choices	Elementary School				High School				College			Graduate English
	5	6	7	8	I	II	III	IV	I	II	III–IV	
13								1	2	3	9	25
12								1	5	5	7	29
11						1	1	5	6	6	15	26
10						3	3	13	12	10	15	35
9					1		6	13	19	20	29	*29
8	3		2	3	6	7	10	21	27	20	*25	30
7	3	2	6	13	11	29	29	36	*34	*27	28	30
6	3	1	18	17	31	57	44	*51	44	22	29	27
5	3	9	33	73	*55	*76	*67	53	33	32	20	18
4	*15	*12	*50	*78	79	71	62	39	27	16	15	10
3	8	22	44	94	50	65	48	37	12	13	8	1
2	11	9	48	56	20	16	15	11	5	4	1	
1	7	7	16	19	9	4	2	3	2		1	1
0	3		2	3			1					
Total	56	62	219	356	262	329	288	284	228	178	202	261
median	3.9	3.7	4.0	4.1	4.7	5.1	5.1	6.0	6.9	7.0	8.0	9.5

Analysis of scores yielded results yet more interesting. Chart 48 shows the percentage of the persons in each grade who chose each version of the above stanza as best. From the sixth grade through the third year of high school the sentimental version, with its silly slop about the dear tender sea shell in its happy-happy home, was preferred to the poet's own exquisite verse! Similar adolescent preference for sentiment was found throughout the test. Most consistent dislike was for metrical crudeness; it may be remembered that a feeling for rhythm appeared even in nursery school children.

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[17] Adapted from (1).

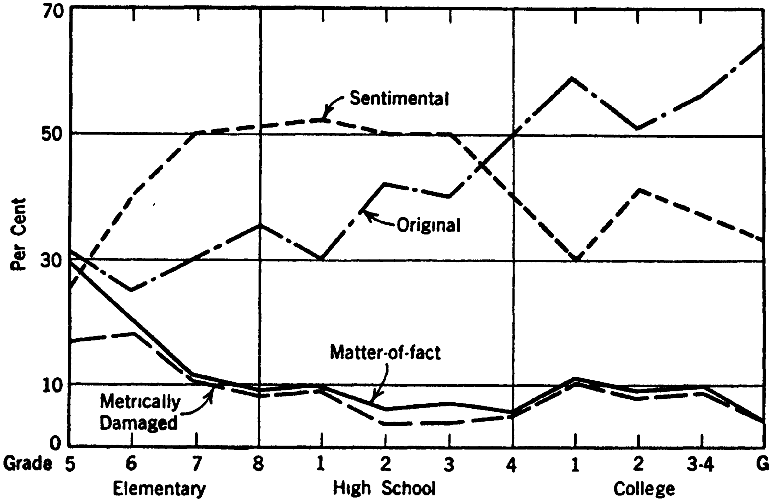

CHART 48.—Percentage of students in each grade marking as best (a) the sentimental variant of the stanza to a seashell, (b), the original stanza, (c) the matter-of-fact, and (d) the metrically damaged variant. (From Abbott and Trabue [1].)

Factors Involved in Aesthetic Development.—Aesthetic development thus proceeds as part of the total sweep of growth and change. The important factors influencing this development need here be only briefly mentioned. That aesthetically superior surroundings tend to foster aesthetic development hardly needs to be proved. It may be noted, however, that ratings as to the merits (the attractiveness of the building as regards architecture, landscaping, interior) of the homes of a group of aesthetically superior children and another group aesthetically inferior showed a 26 per cent greater attractiveness in the homes of the first group. Chapter XI will present evidence of much more rapid aesthetic progress in schools in good than in poor neighborhoods.

Correlation between general ability and developed aesthetic ability appears to be low but positive—perhaps around .20 (24). Apparently subnormal children can develop an appreciable though elementary artistic skill and appreciation (45). People superior artistically are usually superior in general ability. Presumably (as was mentioned in the chapter on abilities) many factors are involved in ability in an art—sensory acuity, appropriate motor skills, perceptive acuity, imagination, aesthetic judgment (49).

Important for the schools is the evidence that much material they commonly use in efforts to foster aesthetic growth is grossly inappropriate for that purpose. For instance, it would seem obvious that if children simply do not understand the literary masterpieces they are asked to read, their appreciation of good literature is hardly likely to be furthered by such reading. But all too often, outcomes of lessons in literature are like those illustrated by the following study.

Ninth-grade children were asked to read Byron's "Destruction of Sennacherib" and inquiry was then made as to what they had got from the reading. The poem is as follows:

The Assyrian came down like a wolf on the fold;
And his cohorts were gleaming in purple and gold;
And the sheen of their spears was like stars on the sea,
When the blue wave rolls nightly on deep Galilee.

Like the leaves of the forest when summer is green,
That host with their banners at sunset were seen;
Like the leaves of the forest when autumn hath blown,
That host on the morrow lay withered and strown.

For the Angel of Death spread his wings on the blast,
And breathed in the face of the foe as he passed;
And the eyes of the sleepers waxed deadly and chill;
And their hearts but once heaved, and forever grew still.

And there lay the steed with his nostril all wide,
And through it there rolled not the breath of his pride;
And the foam of his gasping lay white on the turf,
And cold as the spray of the rock-beating surf.

And there lay the rider distorted and pale
With the dew on his brow and the rust on his mail;
And the tents were all silent, the banners alone,
The lances uplifted, the trumpet unblown.

And the widows of Ashur are loud in their wail,
And the idols are broke in the temple of Baal;
And the might of the Gentile, unsmote by the sword,
Hath melted like snow in the glance of the Lord!

A summary of the poem written by a 14-year-old ninth-grade boy is given below:

"The Assyrians came like wolves by night, crossing the rolling waves of the sea of Galilee. And his weapons were gleaming like purple and gold; and the sharpness of their spears was like the sea of stars seen by Galileo.

"They wore green uniforms in the evening and the next morning brightly colored like autumn leaves. It was a cowardly army creeping up like a pack of wolves.

"The army of Galilee was defeated when the foe swept down on them, and they were scattered and strown when the death trumpet sounded like autumn winds. They met with an unexpectedly strong enemy. The blast, that is, the explosion that followed, caused many deaths and the eyes of the deadly awakened and for a moment they were frightened and then their hearts took courage.

"And there lay the steed with his mouth wide open, but through it there rolled not the breath of his pride. The foam of his gasping lay white on the surf, and cold like the spray of the imprisoned criminal beating against the stone walls.

"There lay the rider all hacked to pieces with dew on his brow and rust on his letters.

"Because of previous wars there were many widows, and they were crying aloud for revenge upon the Assyrians. They created such a commotion that the idols were upset in a temple in Palestine. The Assyrians destroyed the idols and the Army of Galilee melted like snow in the lance of the Lord." [18]

On a test to find the main points in a brief literary passage, these ninth-grade children averaged only 50 per cent, possessed only about half the background information presupposed in the passage, and knew only about 60 per cent of the important words (it has been suggested that the preparation of a lesson in Shakespeare "partakes of the nature of studying a foreign language"). In another extensive study, 573 poems selected as widely used in schools were submitted to a total of 50,000 children. Of these poems, 38 were flatly rejected, and only 39 per cent of the others appeared in readers for the grade in which the largest number of children liked them.

But, as with attitudes and character traits, it must never be forgotten that school and home are in a community and a culture, and that values are a product of the total social situation. Aesthetic values change—what a contrast between the popular music of the "gay nineties" and now! What a contrast between the most esteemed poetry and painting and architecture then and now! What contrasts in everyday likings as to clothes and furniture and shop windows—and mustaches and hair-do's and feminine figures! And what great contrasts between our music and art and architecture—and our arts of daily living—and the arts and living of Russia or China! Styles and preferences are different in different parts of this country. And they change, sometimes almost overnight.

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[18] From T. W. H. Irion, Comprehension difficulties of ninth-grade children in the study of literature, *Teach. Coll. Contrib. Educ.*, 1925, No. 189, 116 pp.

There are amusing evidences of the effect of social influences upon aesthetic choice. In one experiment students were shown pairs of pictures and were told that the one with a check mark in the corner was generally preferred. Then another set of pictures was shown, of which some had check marks *applied by chance;* and when asked which they liked best the students chose those with checks more often (63). When pictures or literary passages are attributed to well-known artists or authors, preference is markedly increased (23). And of course fads in music and art are common.

Further, even more than in the case of attitudes and character traits, the dynamics of the individual's inner life are important. Aesthetic experiences are highly personal and intimate. They may have many origins. One youngster may have a sensitivity of eye or ear, a dexterity of hand, or marvelousness of voice such that up-welling artistic activity seems as natural as everyday play is for most children. A shy, retiring child may find in painting or writing an unhealthy withdrawal from normal activities and social contacts. But this same child may, with a wise teacher's help, win back status and acquaintanceship with other children by their recognition of his accomplishments in drawing or music or other art. A physically handicapped child may find here his great opportunity. Emotional frustrations may work themselves out in artistic creation.[19]

Since an individual's artistic efforts are thus highly personal, ridicule or harsh comment upon them may cause acute distress and perhaps block further expression. The writers know a boy who was publicly ridiculed by his second-grade teacher because of a mistake in singing and who never thereafter would participate in school music. On the other hand, tactful encouragement can foster such development in a fashion marvelous indeed. The reader may well in this connection return to the description, given early in the chapter on abilities, of the girl who developed a marked artistic talent as a result of both the limitations and advantages of her home situation.

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[19] Significant here is the fact that projective techniques, in which the individual is given opportunity to express himself in drama or painting or fanciful play, can be highly revelatory of emotional problems.

Increasingly the importance of psychological backgrounds is being appreciated in art education. "Art is a warmly personal subject. . . . It is concerned directly and constantly with human individuals and groups . . . with emotive sense images, aspirations, loves, and hates. . . . Success in art depends to an unusually high degree upon obscure personal factors in the student, the teacher, and the mature artist. . . . The situation points to an outstanding need; and that is for more careful systematic study and experiment in the psychology of art—not in isolation, but in relation to general psychology." [20]

Aesthetic Development and the School.—In the light of what has been said in the preceding pages it should be clear that the contribution of the school to the child's aesthetic development must be far more broadly conceived than merely in terms of a class in music or a class in art. "The most important concern of art education is the growth of personality." And "the primary need for art is as it occurs in everyday activities, such as those relating to the home, the community, commerce, and industry" (27). Schoolrooms and school buildings should be attractive; school music should be a joy, not a lesson. Education for aesthetic valuing should include dress, the decoration of one's room at home, and discrimination of good movies and good radio. Perhaps the movies and radio rather than Shakespeare should be matters of major concern and consideration in the public schools.

There are here very serious responsibilities. "That art is a powerful means of influencing children, and thus of educative control, is evident if we consider the hold of motion pictures, comic strips, and illustrated stories upon the imaginations of youth. . . . Art is a powerful means of social control in general. It operates effectively in the dictatorial states, and we should not forget the long history of religious art in the service of various creeds and cults or the present influence of advertising, political cartoons, and posters" (54).

To a dynamic psychology, efforts to develop art appreciation should by no means consist of "sentimental effusions about pictures and ineffective attempts to make children like them." Nor should skill in art be concerned simply with painting flowers and modeling in clay. In a modern school, work in art is social, active, practical problem-solving. Thus a certain tenth-grade class, moved to a new room, appreciated it as a "dreadful place"; committees were then formed, color schemes planned, pictures made, furniture rearranged, and a very satisfying room finally created (54, p. 537). Groupings of clippings on bulletin boards present simple problems of artistic arrangement; the planting of a flower bed is a color problem. The planning of a girl's dress or of a dinner-table arrangement for a party gives opportunities for artistic creativeness. Another class of high school girls and boys discussed good taste in dress with a forthright candor which startled the teacher but had obvious effects on the appearance of certain members of the group thereafter. By means such as these, the natural urges of young people to be active and social and to have the regard of the other sex are utilized.

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[20] Thomas Munro, Curator of Education, The Cleveland Museum of Art and Chairman, Division of Art, Western Reserve University, in (54), p. 249 ff.

Relationships with home, community, and local culture may be many and various. One of the writers recently attended an evening meeting in a school where parents, teachers, and children jointly planned simple landscaping for the school grounds *and* neighborhood. To another community the school orchestra is more of a pride than the athletic teams. Certain North Dakota rural schools had Norwegian grandmothers teach handweaving, to the delight and pride of these good women and their families, and with artistic gain for school, children, and community. By such means may the social psychology of school and community cooperate to foster aesthetic interests and improve the standards of good taste of all concerned.

Of course in all these matters the psychologically sound school will keep in mind the developmental level of the pupils. Tots of 4, boys of 12, youths of 17 all have their aesthetic sensitivities and their creative urges; but in what they appreciate, and what they desire to do and can do, they greatly differ. Measures of "aesthetic age" are indeed needed. Individual differences are enormous: boys of 12 may vary from the precocious musical genius to the rowdy noise-maker who seems musically stone-deaf. But if aesthetic opportunities suitable to the interests and abilities of each youngster can be provided, there is much to suggest that an artistic renaissance may be brought about in the schools of this country.

Summary

Attitudes, character traits, and aesthetic sensitivities evidently develop in ways complex indeed, but having important common features. What are these features? And what useful conclusions may be arrived at, regarding the ways in which people come to look with favor, moral approval, or aesthetic thrill upon certain things or acts and dislike or disapprove others? The important generalizations appear to be as follows:

1. As would be expected, attitudes and ideals develop and change with age, and they may differ markedly from one individual to another. Physical traits—health, vigor, strength, attractiveness—may greatly affect an individual's attitudes and ideals both directly and as a reaction to others' attitudes to these traits in him. The attitudes and especially the inner emotional life of the home subtly and powerfully affect the attitudes and ideals of the children in it. Socio-economic and cultural influences are so pervasively important that few individuals ever realize how much their ideas and ideals are creatures of such circumstance. Reading matter, radio broadcasts, and motion pictures play upon people's likes and dislikes and often strongly influence them. And constantly there is in the background an inner emotional dynamic, giving an emotional consistency to attitudes and ideals which to an outsider may seem inchoate and unpredictable. A young person's attitudes and ideals seem often grossly unreasonable, stubborn, and again at another time or in another respect shifting without cause. But with understanding of the backgrounds above mentioned, most such phenomena can usually be explained. Both educational experiments in this country and the frightening success of propaganda abroad indicate that attitudes and ideals can be markedly influenced by means carefully planned for that purpose.

2. Character traits develop and change throughout life. A small child knows only that, for reasons he does not understand, certain acts are forbidden and others approved. Gradually he learns the common rules of conduct and their rationale. He abides by them in proportion as the groups of which he is a member do so, he can satisfy his desires without breaking them, his ideals give support to them, and he is not suffering from emotional frustrations or physical conditions causing extreme irritability. To make rules of conduct which are sensible and realistic, to habituate children to these rules and explain their good sense as the children become old enough to understand, to make conditions favorable for desirable conduct, to foster ideals supporting such conduct, and to keep children physically and emotionally healthy—this in brief might be considered a program for character education.

3. The development of standards of taste begins very early. Even in babyhood bright objects, rhythms, and simple songs begin to be liked. Appreciations and creative skills grow through the years in con-

gruence with the total growth pattern. Again home and neighborhood and community culture have their great and cumulative effects. Again the inner emotional life is the key to much which would otherwise be unintelligible. And again there is evidence that a modern school can notably stimulate the aesthetic development of its children and also of the community.

What are the important common features which appear when attitudinal, characterological, and aesthetic growth is thus considered together? First that there is indeed in all these respects a process of growth that is congruent with and part of the total process of growth so far considered. Second, that the social groups in which the individual develops are the important environment determining the nature and direction of these developments. And finally, that the clue as to why a given individual's attitudes, moral conduct, and aesthetic valuings develop from his reactions to his world in the way they do is to be found in his intimate emotional life.

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CHAPTER X

The Individual Child

The preceding chapters have shown striking differences among individuals as regards growth, health, abilities, interests, emotional adjustment, social development, and "ideology." It remains to bring all this material together so as to see the total richness of individuality shown by any real child when all these various elements are considered together. Each child presents a unique compounding of such traits. Further, each child is dynamically developing in his own distinctive way. If a teacher is really to accomplish anything, she must know each child's characteristics. And (still more important) she must have some understanding of the underlying developmental trends and their causes. Only then can she bring it about that each child finds interests congruent with his abilities, friends suitable to him, attitudes and ambitions best in accord with his potentialities. With such understanding, she may do marvelous things. To bring Mary from shy diffidence into leadership in a previously undiscovered ability, transform James from a rebel into helper, or give Henry the guidance and stimulation which years later make him prominent in his community and grateful to his old teacher—these are experiences which can be as thrilling as a prospector's discovery of gold.

Many teachers fail to see any but the more obvious differences among their pupils because they do not know how to study children; much as all Chinese look alike to a non-Oriental, most children seem alike to these teachers. All too often they are totally unaware of the determining influences back of young people's behavior—the neighborhood which schools one child in delinquency or the domineering parent who breaks another boy's spirit. Once any phenomena are closely studied, however, differences appear, and something as to their causes. And these facts are perceived in proportion to the range and excellence of the techniques used. First to be considered here, therefore, are methods for the intensive study of individual children. Next, sample case studies will illustrate different types of children with which a teacher may frequently deal. Finally, ways of dealing with each child as an individual will be touched upon.

Results of an intensive study of a fifth-grade class will show something as to how varied the children usually are, in even a small group all supposedly at the same educational level and from the same neighborhood.

Really the school drew from two neighborhoods. One area had mostly single-family dwellings; the fathers were for the most part small businessmen or office workers, few of the mothers were wage earners, and the families were small; most of the parents had had at least a high school education, and most were Protestant. But some of the pupils came from a border area of shabby two- and three-family buildings. Most of the fathers in this section worked in a nearby factory, as did some of the mothers; many of the families included four or five children; their names showed that these people were of relatively recent immigrant stock, and they attended the big Catholic church near by.

The children in this class varied in age from 9 to 13 years, in height from 47 to 60 inches, and in weight from 55 to 103 pounds. Of the 34 youngsters, 7 had appreciable defects of vision, 1 was slightly deaf, 4 had impacted teeth, 3 had adenoids, 1 was crippled, 8 were malnourished, and 5 had at some time suffered a serious illness. Two girls had already begun to menstruate.

The I.Q.'s of the class varied from 68 to 147; 2 children had distinct musical ability, 1 drew unusually well, and 4 had exceptional mechanical skill. Tests in school subjects showed reading rate to range from second- to ninth-grade level, and ability in other subjects to vary about as much.

As would be expected from the last statement, several children showed great interest in reading, but others none. Most of the boys liked baseball, but one spent all his spare time in his basement carpenter shop, and another was an electrical "wizard" whose skill with radios and other appliances was a matter of neighborhood comment. One girl wanted to be an actress, another a nurse; one was already so boy-crazy that she presented a conduct problem, and one boy had been in juvenile court for petty thieving.

Three of the children were leaders; one was an isolate who seemed completely apart from the others. Five girls who came from the better side of the school district constituted a little clique; they tended to reflect home attitudes and to look down on the girls from the factory-worker area. Four boys from this latter district were members of a gang. The only son of the social leader of the community was considered a sissy by the other boys. But the teacher favored him because of his mother's prominence, and he made a special effort to obtain the teacher's regard because the children disliked him—with the result that the other children disliked him still more.

Really, this fifth-grade class was a complex little society, made up of a great variety of individuals each presenting problems different from the others. But of most of these facts the teacher was unaware. They were simply 34 children, all about the same age and looking more or less alike, who turned up each morning, had to be kept at the required tasks so far as possible for six hours, and then were dismissed with a sigh of relief.

TECHNIQUES FOR THE STUDY OF INDIVIDUAL CHILDREN

The best method for an intensive study of individuals is what may be called the "case study" method, the purpose of which is to assure that so far as possible all important sources of information are tapped and types of information gathered, and all this information so organized and interrelated that the person studied is clearly seen as a dynamic individual trying to adjust to a particular and understood environment. Although some of the work of gathering this information is of a quite routine nature, the major objective of the case study method—to see the individual as a whole, in his world—should never be forgotten. A complete case study usually cannot be made for every child in the classroom; however, teachers should be familiar enough with case study methods to be able to use them for children who especially need individual study. And teachers should have the case study point of view, should realize that such study is necessary for real understanding of a child.

Material and Organization for an Adequate Case Study.—First of all, what information is essential for a reasonably adequate and balanced understanding of an individual? No case study can be considered trustworthy if it does not include basic information about three topics: the environment in which the individual has grown up and now lives, the history and present status of his family, and his own development and present status and problems.

First to be considered may well be the physical, socio-economic, and cultural environment in which the individual has lived and is now living. The circumstances in which he is living tells much about him, and all these conditions are formative in making him what he is.

In what kind of community and neighborhood has the individual lived —in a rural area, a village, or a city? In a slum or a good residential district? Has there been much moving about? Is the dwelling a back-country cabin, a trailer, a tenement, a cottage, or an estate?

Are the neighborhood and the community prosperous or poor, in a boom or a decline? Are the people farmers, factory workers, or business and professional people? Do many of the mothers work? Are there playgrounds, pool-rooms, churches, bars, country clubs? Is there a high or low rate as regards frequency of tuberculosis? Delinquency?

What about the "culture"—the ways of life, ideas, and points of view of the group in which this individual lives? Is this a group of recent immigrant origin in which the child is supposed to be subject to the autocracy of the father? Or is it perhaps a group of prosperous and well-educated young parents who pride themselves on their modernity, and some of whose children have too much independence? Is it a church-going group, and if so, primarily of what denomination? What is the nature of the community and neighborhood politically? Is it dominated by machine politics, or perhaps known for the independence of the voters? All such information is of importance as evidence regarding the cultural climate which subtly but powerfully affects the personality of everyone.

Next the individual's family should be studied. From it he may have inherited certain characteristics which may thus be recognized as constitutional. By members of the family he has probably been greatly influenced; a wise or indulgent mother, a protective or jealous older brother may be the most important influence in a child's life. Consideration should be systematic to prevent inadvertent omission of important items. An outline which follows in large part the chapter topics thus far in this volume may well be used.

What about the physique and health of the family? Are most of the members vigorous and hearty, or frail and lacking in energy? Has there been good health or illness, and if the latter, of what types?

What about the abilities of members of the family? What has been the education of parents and other members of the family? The occupations and incomes? Have there been any outstandingly able people in the family as shown by accomplishment or repute, or are there others who by similar evidence seem feeble-minded? Any persons of special ability or disability?

What are the interests of the family as regards sports; reading, music, social activities, church, welfare, ambitions? Or is there little interest, except in just getting along?

What about emotional adjustment? Is the family known for being moody or cheerful, short-tempered or even, aggressive or timid, reserved or uninhibited? Is there conflict in the family, or some member who is a source of emotional irritation or distress?

How about the social status and relationships of the family? Is it a leading family, a family on the make or the decline, or is it looked down upon as improvident and disreputable? Is it discriminated against because of race or religion, or for some other reason? Or is it little known or isolated? And what about social relationships within the family circle? Is it a broken or an inharmonious home? Is there a favorite child? A boarder?

Finally, what are the attitudes and ideals of the family? Is it overidealistic and impractical, narrowly religious, hard-boiled and unscrupulous, or perhaps discouraged and without ambitions or purpose? Is there a conflict of attitudes and ideals within the family—as when a mother wishes her daughter to be a social butterfly but the daughter herself wishes to be a nurse?

Next, what has been the history of the child or adolescent being studied, to date? Here the same list of major topics may well be used as was given above regarding the family, but with modifications and extensions of detail.

First, what is the individual's developmental history as regards physique and health? Was birth normal? Has physical growth been normal, as shown by height and weight, age of walking and talking, age of reaching puberty? Have there been serious illnesses; or physical defects as of vision or hearing; or chronic handicaps such as infected teeth or tonsils, chronic colds or indigestion, underweight? What about his present condition: does he seem in vigorous health or ailing, physically energetic or quiet? Is he easily fatigued, or overactive? What is his physical build: is he tall or short, stout or thin, well coordinated or clumsy in movement? If there have been any physical examinations by a physician or a school nurse, what were the findings?

What evidence is there regarding his abilities? Has he done well or poorly in school? Has he shown special abilities or disabilities as in arithmetic or music, mechanics, social ability? Has he been given any tests of general or special ability; if so, what were the findings? What are other evidences or judgments regarding abilities? Was intellectual development precocious or slow? Have any special factors (such as special encouragement and training in music, for instance) possibly affected the development of the individual's abilities?

Are his interests varied, numerous or few, changeable or persistent? Does he prefer active or quiet games? How much and what does he read—*Popular Mechanics,* cowboy stories, or *True Romances?* Is he interested in his schoolwork; if so, in what subjects? In his home workshop, in dramatics, football, dancing, or professional baseball? What are his vocational interests?

What of his emotional development? Does he seem frustrated, belligerent, show strong antagonisms, jealousies, or affections? Is he timid, anxious, troubled with special fears or worries, withdrawing? Is he bad-tempered, mean, hard to control? Or is he easygoing, good-natured, overconfident? Is his mood depressed or cheerful? Does there seem to be emotional blocking? Does inquiry into the history of his emotional life show particular episodes or influences which account for special emotional characteristics, or marked change at some time which would suggest some such factor?

Socially does he have status with his peers? Is he favored or disliked by teachers, by a parent? Is he a leader, follower, or isolate? Is he too domineering or too quiet? A bully, or imposed upon and the butt of jokes?

Does he have habits that distress or antagonize others? Are his manners objectionable? Does he know how to behave at social affairs? How to dress in good taste? Has his social development been normal or affected by special circumstances, like frequent moving about? What is his position in his family: is he an only child, a favored child, oldest child? How does he get along with the other sex?

What of his attitudes and ideals? Is he too idealistic or a sophomoric sophisticate? Has he been a trouble-maker at home, in school, or in the community? Does he cheat? Has he been delinquent in any way? If so, what seem to be the motivations and circumstances?

Finally, in the perspective of all this information about the individual's environment, his family, and his own development, what is the appraisal of him as a total person, the interpretation as to what has made him what he is, and the recommendation as to what should be done in the light of all these findings?

Appraisal may be easy: one child is a cripple, another clearly feebleminded, and a third a grossly frustrated girl all of whose efforts to find association with the other sex are blocked by a hypochondriacal and prudish mother. But other cases may require an exceedingly careful balancing of all the evidence. Is Ruth desirous of leaving school because she lacks money (her own statement), or is the real difficulty that she isn't in things socially, that the college preparatory program curriculum in which she now is does not meet her needs, or that she is not very able?

The last-mentioned case shows how not merely the facts turned up by the case study but an interpretation of those facts in terms of the dynamics of the situation and the child's personality is necessary. Ruth's real trouble was that, coming from a home of little means but attending a high school in a prosperous suburb where most of the other girls were college-bound, she didn't fit. Even an apparently simple case like the crippled boy required interpretations: why was it that, in spite of the crippled leg which prevented much active play, he was popular, willing to try, and a capable student? The facts that wise parents had taught him to take his handicap in his stride, and found opportunities as in music for him to make good with other youngsters, were important items in interpreting this boy's fine development.

And now comes the last and most important item of all—the recommendations as to what, in the light of all the information that has been assembled, should be done. Clearly, unless the case study *does* result in some practical recommendations that may lead to actual benefits to the individual and the solving of the problems which called for the making of the case study in the first place, then all the labor is largely futile. To know that one child is feeble-minded and another a victim of parental domination is of little value unless something is done about it. The recommendations should suggest what should best be done. And they should be practical; to recommend that a feeble-minded child be put in a special class if there is no such class and no chance of having one is of little real help. A special work permit for an adolescent feeble-minded boy is sometimes better than further schooling. But such a recommendation is sensible only if there is work available which he can do; and the recommendation should take account also of his needs as regards recreation and companionship and guidance through the difficult years of later adolescence and young adulthood. In the case studies which follow, questions of recommendation will be stressed.

Making a Case Study.—Clearly, to make an adequate case study is not easy. How does one go about it? Against what shortcomings or errors should one especially be on guard?

Probably the most common shortcoming of any, in the average school's consideration of a child or adolescent, is that stress is almost altogether on ability to do lessons and get along with the teacher. The usual school record form includes only marks in the school subjects and deportment. This fact usually is an indication of the average school's point of view. How the young person gets along with other young people of both sexes, and not only at school but also elsewhere, is little known. Little or nothing is known about his family and the house and neighborhood in which he lives.

A second usual fault (part and parcel of the first) is that sources of information are one-sided and inadequate. All too often a case study takes its point of departure from, and is based primarily on, the opinions and information of one teacher—the room teacher in elementary school, and in secondary school the adviser or home-room teacher. Other teachers' relationships with the youngster, and information about him, may have been very different. Far more serious is failure to obtain information from (and about) the home. No case study can be considered adequate unless a parent has been talked with—preferably in the home, where direct observation can be made of its nature. Whether a parent is right or tragically wrong in his opinions and attitudes regarding the child, those opinions and attitudes must be known. A third gap is most common of all. Teachers and parents are in authority over the youngster, and their attitudes toward him may be dominated by his attitudes toward their authority. What is said about him by other youngsters, and by adults like the shrewd proprietor of the corner drugstore? They know one boy as a fine lad but in rebellion (at home and at school) against parental vocational plans for him which are grossly unsuitable; another youth is ingratiating in his relations with doting mother and teacher but is known as a scamp in town.

Another important source is now less neglected than formerly. Wherever there is a possibility that physical illness or defect may be a factor, medical opinion should be sought on this question. If there is no school physician or nurse and the family has not obtained medical attention, the school should try to arrange for a physical examination to be made by a physician.

The third common fault is this: the investigation does not penetrate through the rationalizations and preconceptions and prejudices readily found by superficial inquiry, to the basic underlying emotional stresses and conflicts of points of view. Mary's reason for leaving high school is not lack of family finances; it is that she has been snubbed by the social group she had hoped to enter. The important reason for Henry's complete failure in the high school college preparatory course is not that he is dull; it is that he wants to be a farmer but his father insists that he should go into law. Rosalia is not either oversexed or essentially immoral; her running away is really a rebellion against her father's old-world restrictions on her freedom and the dull poverty of her home. A case study which fails to get through the superficial facts to such understandings may be worse than useless.

How may such faults be avoided? A guard against narrowness is the use of a simple but comprehensive case study outline. The outline used in this chapter may well serve. Here it is:

Name of case, address, age, school and grade or class, name of parent or guardian, name of person making the case study, and date of study
Problem
Sources of information: such as teachers, mother, older sister, school nurse, neighbor, friendly talks with the youngster himself
Physical, socio-economic, and cultural environment
Family characteristics and history:
  Physique and health
  Abilities
  Interests
  Emotional adjustment
  Social status and relationships
  Attitudes and ideals
History and present characteristics of the case:
  Physique and health
  Abilities

  Interests
  Emotional adjustment
  Social status and relationships
  Attitudes and ideals
Appraisal, interpretation, and recommendations

The remedy for inadequate and one-sided sources of information would seem obvious. A teacher should regard it as an axiom that she does not understand any pupil until she has visited his home *and* obtained some evidence, from both observation and talks with other children and adults, as to how he gets along with people outside both school and home.

Diversity in sources of information is to be sought. Not only other teachers but also the principal, the athletic coach, the school librarian, or the janitor may have observed little episodes on the playground or before school, or picked up bits of information about the family that give new insights into a child's problem. Shrewd little comments by other children, bits of gossip at a parent-teacher meeting, a hint dropped by a storekeeper may lead to the discovery of an unsuspected influence in a child's behavior. The society and personal columns in the local paper should be read. But a teacher should not get all her extra-classroom information secondhand. Attendance at church and other community gatherings will be directly informative. More important—acquaintance may thus be made with those in the community who can help, if a pupil needs help of some sort.

Special types of data should of course be sought when needed; a medical examination, a test of general or special ability may yield definitive information. There may be unsuspected records in the school office, juvenile court, or a local charity.[1]

To see through the rationalizations and prejudices to underlying emotional stresses and motivations is a most difficult task. Often it is the teacher's own rationalizations and prejudices which must be seen through. Here the most important element (assuming that one knows about such psychological phenomena) is skill in interviewing. And the essential skill in interviewing is the tact that brings the person interviewed to talk freely. What are the important elements in such tact? If possible, sufficient knowledge of the person so that he can be approached on the basis of his interests and without offending his prej-

[1] A teacher cannot, of course, make intensive studies of many children. Many teachers have neither the ability nor the time and opportunity to make adequate case studies of any. In fact, if a case study is to be adequate, it is desirable that a visiting teacher, psychologist, or other person with special training and time for the work should do it. But a teacher should have some appreciation as to what an adequate case study is. And she should be able, upon need, to do the best she can in study of the individual pupil.

udices and points of view. An attitude of friendliness, an evident desire to be helpful, a patient willingness to let him tell his story with sufficient freedom and leisure so that the desired evidences of background feelings and desires will have a chance to come to the surface. And questioning which fosters that process rather than asks for a preconceived answer.

Thus it was not till toward the end of a second long talk with Mary, and after the interviewer had made some pride-saving comments about the unfortunate snobbishness of certain high school social groups, that the girl's failure to make good socially came out as the real reason for her leaving school.

In fact, the person interviewed should usually not realize that an "interview" in any formal sense has taken place, but should rather regard the occasion as a friendly informal talk regarding matters of common concern. Ordinarily there should be no taking of notes during the interview (unless an address or telephone number or other similar item). Personal questions should not be asked until a friendly relation has been established. The interviewer must be on guard not to talk too much or question too much; rather, the effort should be to bring the person interviewed to talk with confident freedom and help in every way possible regarding the problem. Necessary questions should be worked into the conversation in a natural way. Never should a teacher sit, pen in hand, and fire a set series of queries at a parent. A record of the case and organization of material according to a case outline such as has been suggested should come later.

But enough of general discussion: the best way to become familiar with case studies is to consider some.

TYPES OF INDIVIDUALS

Every individual is different from every other, but types can nevertheless be distinguished. What are the important ones? How may they be differentiated? And what should be done with each type?

Though there are distinguishable types, three reservations must be made in this connection. In the first place, though extremes can be distinguished, the distribution of traits is continuous. Some individuals are defective, but there are more who are borderline or below normal. Some are very unstable emotionally, but many people are somewhat so on occasion. Some children and adolescents are chronically delinquent, but almost everyone has been delinquent occasionally. Doubtless, most readers of this statement have at some time stolen something, cheated on certain occasions, lied on many, and indulged in various other delinquencies of one sort and another. One must not talk easily about the feeble-minded or the unstable or the delinquent as if they were groups apart. The distinctions are distinctions of degree, and are often difficult to make.

The second point is this, that almost always any particular individual is not a clean-cut type but really a combination of types. He may be intellectually subnormal but also somewhat emotionally unstable, and delinquent on occasion. He may be superior and delinquent.[2]

Third and most important is this fact: Complex as a case may be, it always has this unity, that the young person is trying somehow to make good —to achievé his purposes, to find his status and place in the world. Unless an individual is understood from this dynamic point of view, in terms of his urges and feelings, no real understanding can be had.

The "Average" Individual.—The largest, most diverse, and in many respects least understood of all types of youngster is the so-called average child. Here two misunderstandings are common. In the first place, the reader probably thinks of average as average of people he knows. But the average of people a college student knows is probably somewhat above the average of the general population in socio-economic and cultural background, and in abilities, interests, attitudes, and ideals.[3] In the second place, the range which may be included in "average" is very great. One 12-year-old boy who weighs 60 pounds and another who weighs 120 pounds may both be "normal." Intelligence quotients may range from 80 to 120. Social relationships may vary greatly; it is quite normal for some children to be highly social and others to be reserved. The "average" is spread out very wide.

James—one of the great mass of "average" individuals. Age 17, junior in high school.

Problem. Vocational choice, also indifferent to schoolwork.

Sources of Information. Industrial arts teacher, mother, sister, former seventh-grade teacher who is acquainted with the family, and the boy himself.

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[2] Terman (56) reports that one of his group of brilliant children as a young woman spent several years in a house of prostitution but later married a respectable man and settled down.

[3] It must be remembered in this connection that the total income for families averaging four people has even in good years in this country been around $1700, and that around 20 per cent of such families had incomes of below $1000. People over 25 years old have had an average of eight years schooling. For a discussion of such problems as they relate to a practical psychology, see (45), chap. 3.

PHYSICAL, SOCIO-ECONOMIC, AND CULTURAL ENVIRONMENT

James lives in a small mid-western city of about 20,000. The city has a railroad shop and several medium-sized industries. The neighborhood in which he lives is one of one- and two-family frame houses, most of them jerry-built in a real estate boom twenty years ago, and now not in the best of condition. Most of the people are of a stock which has been in this country for several generations, but there are also in the neighborhood some families of more recent immigration. Many of the adults in this latter group speak English with an accent, retain many old-world customs, are Catholic, and are not fully accepted by families such as James'.

The wage-earners in this neighborhood work in either the factories or neighborhood groceries, filling stations, or other small establishments. Very few of the parents have ever attended college, and most have only elementary school education.

There are many crowds and cliques in the high school, but James' is not one of the most influential. It is composed mostly of boys from his own neighborhood who ride to school on the street car. They are primarily interested in such activities as touch football and curbstone discussion as to which airplane is most effective.

FAMILY CHARACTERISTICS AND HISTORY

Physique and Health. The mother is 45 and rather badly overweight. She has sick spells of a somewhat indeterminate nature. The father is two years older, of medium build and fair health. Both parents come from a nearby farming district. There are two other children—an older sister and a 12-year-old brother. The children have had the usual childhood diseases but have never been seriously ill.

Abilities. The father has only an elementary school education; the mother went one year to high school. The daughter graduated from high school in the commercial course, and the brother is now in the sixth grade. The father is a factory foreman, and the daughter a clerk in a small dry-goods store. Since there are layoffs in the factory, the total family income averages about $2000 a year. Group intelligence test records showed the daughter to have a percentile of about 60, where James' is 52 for high school students. The younger boy made an I.Q. of 98 on a Binet test.

Interests. The family attends the neighborhood Methodist church and participates in its activities. The family takes a local newspaper, the *Saturday Evening Post,* and the *Woman's Home Companion.* The mother listens to the radio while doing her housework. And the radio is usually on in the evening for a favorite newscaster and a well-known folksy humor period.

Emotional Adjustment. The family seems reasonably congenial and well adjusted to the conditions and circumstances of its life. It grumbles about the wealth of the owners of the factory in which the father works, and comments critically and somewhat jealously regarding social goings-on described in the society page of the local paper. The daughter would have liked to marry. Several young men have been friendly at one time or another, but nothing ever came of it. She is becoming a little old-maidish.

Social Status and Relationships. The family attends church regularly and participates in church social affairs. The mother attends parent-teacher meetings occasionally, and visits with her neighbors. Visits to relatives who live some fifty miles out in the country are fairly frequent. In short, the family lives its life socially and geographically within a relatively restricted area.

Attitudes and Ideals. The attitudes and ideals of the family are very much those of their group. They have conventional political, moral, and religious views. They would like a better economic and social status for their children than they have, and are anxious that all three should have a high school education. No one in the family has ever gone to college and the parents have not thought seriously of sending their children there.

CHARACTERISTICS AND HISTORY OF THE CASE

Physical Health. James had a normal birth and a relatively uneventful physical development. He has had the usual childhood diseases, once broke an arm in a bicycle accident, wears glasses because of astigmatism, is now slightly underweight. He wishes he had athletic ability, and has tried out for the track team but without success.

Abilities. Work in school has been only mediocre. In high school he does not like English, started Latin and dropped the course, has had to work hard at algebra, but has enjoyed shopwork. He is a rather slow reader. As already mentioned, a group intelligence test showed him to be at average in general ability.

Interests. In the elementary school he showed the usual interest in boys' games, although his glasses interfered with such sports as football. He has read adventure stories and recently has been observed (to his embarrassment) reading romantic fiction in the *Woman's Home Companion.* He is interested in girls but shy with them. Vocationally he is uncertain. A stamp collection, made when he was about 12 years old, plus the reading of adventure stories, made him think for a while that he would like to become a sailor. A great interest among the boys of the neighborhood in model airplane building made him consider aviation or aviation mechanics. He is now somewhat interested in photography—has an inexpensive camera. He has talked vaguely but not seriously of becoming an engineer. He finds his schooling hard. Although he does not say so, it is fairly clear that he looks forward to his high school graduation as the time when, with a sigh of relief, he will finish school. He has for some years had a paper route, is thrifty with his money, and enjoys feeling that he is earning.

Emotional Adjustment. James is an even-tempered, quiet, somewhat shy boy who senses that he has not done too well at school in either his studies or his efforts to achieve status (as in athletics) with other students and is trying (very sensibly) to decide what he should try to make of himself. Though he does not admit it, he is a little anxious about his possible future success.

Social Status and Relationships. As a boy he got along well enough with other boys but was not a leader. A neighbor lad who was a close chum moved away when James was 12, and for a time he seemed rather lost. In high school he has found companionship with a group of other boys who take the same street car to and from school. One of these boys is his partner in a laboratory class and they often work together. But he has no close friends. He chats with some of the girls at school but is not a part of high school society.

Attitudes and Ideals. James would like before long to be independent of his family. Last summer he had a job for two months in the factory, and the summer before that he worked in a neighborhood store; he enjoyed these experiences more than school. It has never occurred to him to be other than a law-abiding, respectable, self-supporting citizen, or seriously to question the religious beliefs, moral code, or social and economic structure in which he and his family have their existence.

APPRAISAL, INTERPRETATION, AND RECOMMENDATIONS

James is an adolescent of mediocre abilities and unaggressive personality who has not yet found himself either vocationally or in relations with others of his age. It is clear that neither ability nor interests warrant a continuance of education beyond high school and that vocational planning is needed if he is to do more than drift into a blind-alley job. It is recommended that as soon as possible he take an exploratory course in vocations, in which various business and industrial establishments in the community are visited and vocational opportunities for local youngsters in this community are studied, and that he continue his shopwork. Various extracurricular activities were reviewed, and it was decided that he should join a recently formed camera club. Since this club includes both boys and girls, it will give him some companionship with the other sex in activities where he can participate with confidence.

What are the important points to remember with reference to the average youngster? First, keep in mind what average person and average job and income and status are, and plan educational and vocational programs accordingly. Fortunately, neither James nor his family had serious thoughts of college. All too many youngsters of his mediocre ability do—but find it hard and make no success of types of work for which it prepares. The average boy gets a job in industry, commerce, or agriculture, makes a modest living, and marries. The average girl gets some sort of merchandising, office, or industrial job, and she soon marries. Their education should realistically prepare such young people for such a future.

Second, remember that these youngsters will probably remain in the community and will soon be out-of-school youth; a very practical education for citizenship in that community and for social and recreational life suited to the community and their status is desirable. Practical courses in community civics, courses in art that consider home decoration and dress and movie appreciation, social and recreational programs that tie in with church and community center and can continue after the youngster leaves school—such elements are important.

As already mentioned, the range of traits to be considered average is great. High average cases are college material. Many present-day high school youngsters might be described as too well adapted socially. But such youngsters as James, of only average or below-average ability, both academically and socially, are the most neglected group in most high schools; and since for most of them high school is their terminal education, it has a special responsibility for them. The children who do not complete a secondary school program—or perhaps drop out of school in the grades —usually present even more difficult problems of the type illustrated by James.

The Brilliant Individual.—Brilliant or very superior children are rarer than enthusiastic teachers think; perhaps less than 1 per cent of children ought to be so classified. But they form an important and often maladjusted group. As might be expected, they come usually, but by no means always, from good neighborhoods and good families. Contrary to common opinion, they are likely to be above average in height and weight, to reach puberty somewhat earlier than the average child, and to be in good health. On tests of ability they score high, having an I.Q. of 140 or more,[4] and their schoolwork is clearly superior even though they laze through it. They usually show great verbal facility, but may be inept mechanically. They are great readers but not narrowly bookish; their interests are varied and many. They often complain that they are so interested in a number of vocations that they don't know which to choose. Emotionally they may show the ready assurance and even conceit of the habitually successful. Socially they are usually well liked, and often leaders. However, they are too often held back in school with classmates of their own chronological age and hence boresomely less mature intellectually; their superiority and their boredom may then be so obvious as to make them unpopular. Emotionally sensitive, they respond more than the average individual to both hostility and approval. They are exceptionally capable of the finest purposes and ideals.

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[4] The table on classification of general ability in the chapter on abilities designates this group as "very superior" and including less than 1 per cent of the population, with about 9 per cent called "superior" and having I.Q.'s of 120 to 139.

Arlene J.—a brilliant child in a muscle-bound "progressive" school, just 16 years of age and about to graduate from secondary school.

Problem. Should Arlene be permitted to enter college at this younger than average age—and what program should she take?

Sources of Information. The very ready-spoken Arlene herself, the "progressive" principal of the secondary school, Arlene's very verbal mother, the English teacher, and the home economics teacher.

PHYSICAL, SOCIO-ECONOMIC, AND CULTURAL ENVIRONMENT

The family lives in a very attractive home in the best neighborhood in town. The neighbors are business and professional people who are leaders in the community. Most of them are college graduates; many are widely traveled; most belong to sundry organizations of a social and professional or business nature; thinking is liberal.

FAMILY CHARACTERISTICS AND HISTORY

Physique and Health. The father is erect, slim, and vigorous at 50. The mother at 45 still has a girlish figure and is well groomed and alert. An older brother is now in medical school.

Abilities. The father is a successful lawyer; the mother, a former high school teacher. Both are college graduates. The paternal grandfather was a clergyman; the maternal grandfather a sawmill operator and leader in his little New England town where his family had lived since before the Revolutionary War.

Interests. The family are all great readers, with an excellent library and good magazines always about. They have a fine selection of good records for their phonograph-radio. Both parents are leaders in community enterprises.

Emotional Adjustment. Both parents are confident, well-adjusted people. The father had to work his way, and has more sensitivity to other people's problems than many men of equal success and leadership.

Social Status and Relationships. As indicated, the parents are leaders in the suburban community in which they live.

Attitudes and Ideals. Both parents are interested in community enterprises and welfare. The mother has been a leader in the League of Women Voters and the Women's University Club.

HISTORY AND PRESENT CHARACTERISTICS OF THE CASE

Physique and Health. Although Arlene is now 16, in height, weight, and build she would be taken for an 18- or 19-year-old girl. She reached puberty over a year earlier than average. She is very fond of such sports as tennis and swimming; health has always been excellent and development normal.

Abilities. Arlene has at various times been given tests of general ability. These tests always show her to have an I.Q. above 150—and thus to be in the top 1 per cent of the general population in ability. In school she has done especially well in English, dramatics, and art.

Interests. Arlene has had many interests and has talked at various ages of being a teacher, nurse, actress, artist. These interests have found expression in many school activities; she has been on editorial boards and committees, and is turned to when people want things done.

Emotional Adjustment. The girl is considered by some a little too confident and sure of herself, but her likable friendliness prevents her assurance from becoming offensive.

Social Status and Relationships. Arlene has always been a leader since nursery school. She has always been large, vigorous, and active for her age, and this fact has given her an advantage among children. Her family's prominence gives her entrance and preference in certain situations. She has always had books and toys and a comfortable allowance which provided her materials for childhood and youthful prestige. The parents have been careful to see to it that she had the skills for social relationships. The family had a tennis court in the yard, and she was early given lessons by her father and older brother, both good players. The family cottage at the lake gave opportunity for aquatic sports. The family's social life, childhood lessons in music and in dancing, the companionship of sports, all prepared her for easy adjustment in adolescence.

Attitudes and Ideals. Here is the controversy that has brought about study of the case. The principal feels that Arlene has already been accelerated too much and should not go to college at 16 when the average entrance age is 18. In spite of the fact that Arlene is one of the best-adjusted students socially in the school, the principal declares that such acceleration always leads to social maladjustment. The English teacher says that Arlene has great promise as a writer and should go to the eastern girls' college from which this teacher graduated. But hard-headed Arlene declares stoutly that she has no desire to become an author. She has no desire to spend a year in travel or otherwise waste time. She wants to go to college right after the summer vacation. And she wants to go to the state university and study social administration. She has been fascinated by community problems, as they have often been discussed in her home. She feels that increasing government welfare and social work will make possible exceptional opportunities in this field for women. Oh, yes, she will want to marry some time. But she would like to be doing something first.

APPRAISAL, INTERPRETATION, AND RECOMMENDATIONS

Arlene is a very superior girl of 16 with the all-round maturity of 19 or 20 and intellectual potentialities such as only one in several thousand persons possesses. Her parents' wisdom in giving her freedom to forge ahead as she wishes—in spite of the principal and English teacher—should open the way for further fine development.

As a result of her parents' wisdom and her own vigorous common sense, things seem to be working out well for Arlene. But it must not be assumed that brilliant children present no educational problems. All too often both parents and school insist that such a child must be kept with those of his own chronological age for fear of social maladjustment, and given an "enriched" program.[5] Developmentally, however, Arlene was in every respect—physically, intellectually, socially—much more mature than the average of her age. To keep her back with girls of her own age chronologically would have been as silly as to try to make a subnormal child keep up with them.[6]

Of course, only if there is such all-round development should there be such acceleration. There should be a sensible enrichment, too—as in the social graces, and in modern literature and current affairs which Arlene obtained through her home. Since such people often have many abilities and many interests, a wise choice of vocation is both important and usually possible. Probably with no group does the average school so fail to realize full potentialities as with these children whose potentialities are greatest.

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[5] All too often this means simply penalizing a bright child by giving him extra work. The writers know of two intellectually superior children who deliberately made mistakes on intelligence tests because "if the teacher knows how bright I am she makes me do a lot of extra reading."

[6] As a matter of fact, it is even more desirable that bright boys be accelerated, since they are more likely to go on into professional training of some sort. All too often such advanced training continues until almost 30. The healthiest and most vigorous years of life—the 20's—are thus spent in simply getting ready. Acceleration would get these brilliant young people into their productive life (and also permit them to marry and have families) that much sooner, with gain in all these respects to themselves and society. It may also be mentioned that more accelerated than non-accelerated girls marry. For an excellent discussion of acceleration, see the monograph by Keys (34).

The brilliant child is indeed a fascinating person. As has been stressed, there are many variations from what has perhaps unwisely been called the type. Some brilliant children come from poor homes. A few very superior individuals become criminals—and others become unscrupulously successful people who perhaps should be considered morally no better. A few become socially maladjusted and end as the anemic oddities caricatured in the comic strips. A few become conceited snobs. In short, once more it must be emphasized that desirable development is a complex matter of total life pattern.

Here it may be well to mention that studies of famous people indicate their accomplishments to have been by no means a product simply of intellectual genius. The great people of the world seem usually a product of four influences. They are indeed intellectually superior. They have had superior education or other training fitting them for the work they did. They often had exceptional opportunities. And they showed exceptional purpose and drive in the accomplishment of their purposes. Follow-up studies of superior children all too often do not show the promise of youth realized. In such cases, lack of purpose and drive often seems the important factor.

The Defective Individual.—Children of extremely defective mentality do not get into the schools. Idiots are kept either in an institution or at home. Some imbeciles enter school but do not go beyond the primary grades and are relatively easily distinguishable from normal children, even by an inexperienced teacher. The morons and borderline cases continue in school, are not readily diagnosed in casual contact, and make up the bulk of the children needing special training. If not differentiated early and given suitable schooling in which they can make felt progress and achieve a humble status, they become either a discouraged dead weight in class or bored and resentful disturbers. And after leaving school, they have trouble finding or holding a job, lack desirable opportunities for sociability and recreation, and drift into dependency or delinquency.

At least 10 per cent of the general school population is made up of children whose dullness constitutes a serious educational and social problem. The average youngster of this type is below par in almost every respect. His home is in an underprivileged neighborhood; the family is large and poverty-stricken and neither physically nor intellectually vigorous. He is physically undersized—though this may not be obvious because he is usually with younger children in class and play—and is malnourished and frequently absent on account of illness Learning is slow. There is special difficulty in understanding generalizations and in reading and arithmetic; comparatively, work in music, art, and handicraft may be good. Tests of general ability show an I.Q. not above 80; and though usually retarded one or more grades, tests in the school subjects usually show the unhappy lad at the bottom of his class. Interests are relatively few and simple, and lead him to prefer the company of children younger than he. When with children his own age, he is usually recognized as dull and is either condescended to or teased; when sides are chosen in a game, he is likely to be chosen last. He is not too dull to sense his failures and his status. Increasingly he feels frustrated and either settles back into helplessness or becomes sullen. To keep such a child in a school program so unsuited to him that his troubles thus mount seems indeed stupid on the part of the school, and particularly so since the outcome in adult life is likely to be dependency or perhaps criminality. The following case will illustrate how everything seems to conspire against such children; the case is perhaps somewhat more clear-cut than most.

Willie Wasson—age 14, fourth grade.

Problem. Very poor schoolwork, and question as to vocational plans; potential delinquency.

Sources of Information. Present teacher, attendance officer, school nurse, mother. It will be noted that the sources of information are inadequate especially with reference to Willie's relation with other children in the neighborhood, and also as regards the family and the home life. Willie himself has been talked with by both teacher and attendance officer.

PHYSICAL, SOCIO-ECONOMIC, AND CULTURAL ENVIRONMENT

The home is one of a group of small dilapidated frame houses on the fringe of a small midwestern village. The furniture is rickety and quite obviously "picked up." Water is obtained from a well, an unpainted outhouse stands in the rear, a kerosene lamp supplies light at night. The location is clearly on the fringe of the community in both an economic and a social sense; it is literally "across the tracks" from the village itself. There are a few newspapers about (probably picked up, not bought) and a pulp magazine which was probably similarly obtained, but otherwise there is no reading matter in the home.

FAMILY CHARACTERISTICS AND HISTORY

Physique and Health. The mother is a gaunt and hard-looking woman of about 35, with straggly, unkempt hair and dirty cotton dress. She has four other children, all younger. All appear malnourished. The second boy, 12 years old, has some difficulty with his eyes and is half blind. Two daughters, 10 and 7, are very thin and sickly looking. The mother says that two other children died. The father is described by the mother as "not very strong."

Abilities. Something regarding the father's ability is indicated by the fact that he does only odd jobs and is frequently unemployed. The mother does not know just what schooling he had, but apparently it was about the same as her own—a country school in the Kentucky mountains to which she went only irregularly and from which she dropped out when she was about 13. Of the other children, the second boy has not gone to school because of his visual difficulty, and the older sister has attended only irregularly because of her frequent colds and other illnesses. The other girl is in the first grade, and is also irregular in attendance.

Interests. The family seems listless and interested in almost nothing. Talk centers about their difficulties and illnesses.

Emotional Adjustment. The emotional tone of the family seems not so much anxiety or resentment regarding their troubles as apathy and a fatalistic acceptance.

Social Status and Relationships. The family has almost no social relationships with the community. They sense vaguely that they cannot go to the usual social gatherings of church or school as one of the community because of lack of knowledge as to how to behave in any such social group, and shabby dress. Occasionally they do drop in to a local revival meeting. The children play a little with a similar family down the road.

Attitudes and Ideals. Poverty and illness are accepted with little question as inevitable. There seem to be no ambitions or ideals.

HISTORY AND PRESENT CHARACTERISTICS OF THE CASE

Physique and Health. As near as can be made out from the somewhat unreliable comments of the mother, the boy's birth was normal. But he was always "puny." Walking and talking seemed to have been delayed as compared with the average child. Willie has been frequently ill and has had most of the children's diseases. Now he is a "mouth breather" quite clearly suffering from adenoids. His voice is flat; his skin is pasty. There seems to be lack of physical energy, and a great deal of listless sitting about rather than a healthy boy's play.

Abilities. Poor schoolwork, the basis for special inquiry regarding Willie, indicates his probable abilities very well. Although he is 14, he is still in the fourth grade. He can read only haltingly, and only simple material.

Ability in arithmetic is limited to very simple matters of counting and making change. The Binet test gives an I.Q. of 65.

Interests. Willie shows some interest in baseball, although he does not play very much and is not regarded favorably by the other boys at school because he does not play well. He says he is interested in the movies but he rarely has the money to go. Willie is best described as having no strong interest of any sort.

Emotional Adjustment. Mostly, as with his family, Willie's attitude seems to be that he takes things as they are. There is some resentment at the other boys for their failure to take him into their games, and discouragement about his schoolwork. His emotional attitude is best described as apathetic.

Social Status and Relationships. As already indicated, Willie knows little of the other children of his own age. He is too lacking in energy to participate much in games of skill. He lacks toys or equipment to take part in some activities; he has no roller skates or bicycle. Since he is usually dirty and unkempt, the mothers of most of the other children do not like to have him around. Therefore he hangs about his own home a large part of the time when not in school. He is a social isolate.

Attitudes and Ideals. Willie's general attitude may be described as apathetic, with occasional episodes of resentment at his social isolation and failure in school.

APPRAISAL, INTERPRETATION, AND RECOMMENDATIONS

Willie may be considered a moron or high-grade feeble-minded case. He presents the combination of physical and mental defects, and lack of energy or interests typical of his group. The first need is for physical rehabilitation, then for training in some simple vocational task so that he may be partly self-supporting. The family has chronically been on relief. Willie is likely to drift into chronic delinquency and dependency if society does not manage somehow to do something constructive.

Quite clearly the problem which Willie presents did not begin with him—nor will it end when he leaves school. A wise community would consider a home such as his to be as dangerous as a locus of contagious disease—as, indeed, among other things, it is. Unfortunately, a school can do relatively little to improve homes already in physical and psychological dilapidation. It can do much for Willie. It can (preferably in a special class) give him training in the practical arithmetic and simple reading he needs and can learn. He can be taught how to be neat and well mannered, and how to do some useful work, as in the school garden or shop. A girl can learn something about housework.

And the school can, by constant help and encouragement, give success feelings rather than frustration. It can help bring about better relations with other children. A few devoted teachers of subnormal children have done two other things. They have helped their "graduates" find simple work they could do, and they have continued as friendly counselors in recreation, simple social life, and marriage. With such help, a feeble-minded person may become a self-supporting, moral, useful member of society. There are not enough institutions for defectives to care for a quarter of these cases. But wise education makes institutional care unnecessary.

The boy described above may be thought of as a typical moron. But as must repeatedly be stressed, many cases in every category are not typical. Some feeble-minded people are physically fine specimens. Some are characterized especially by their smoldering resentment against their troubles. They may make savage attacks on children who torment them. Not a few criminal careers begin thus. More than is ordinarily realized, feeble-minded or subnormal children are to be found in families of average or even superior abilities. The family quietly sends the defective off to a custodial school for defectives or keeps him as inconspicuously as possible at home. The not-very-bright youngster in a family in which other children are superior may indeed be unfortunate. All too often teachers and parents try to spur this hapless dullard to greater efforts by disparaging comparisons with brighter siblings, thus causing him increasing despair or resentment. However, as indicated in the preceding paragraphs, wise handling can make these unfortunates into happy and humbly successful personalities.

The Physically Handicapped Individual.—In this group may be included not only those grossly handicapped—the blind, deaf, or crippled—but also those whose difficulties are less marked and might even at first thought seem minor. Recognition of the extreme cases is easy; and for the blind, deaf, or markedly crippled, special types of education are provided by the state. Hence such cases need not be discussed here.

Mild handicaps are, however, more common in school than is often realized. An accident may have resulted in such injury that the individual cannot engage in active play, or at least cannot compete with unhandicapped children. A youngster may not be deaf enough to be sent to the state institution, yet be sufficiently hard of hearing so that he misses much of the conversation which goes on about him. Another child may be handicapped visually so that even with glasses he cannot clearly see the screen in a moving picture house or a baseball as it is thrown toward him. The defect may not be crippling at all but may nevertheless present a major psychological problem, as when a girl has a disfiguring birthmark.

Clearly the first question is as to whether anything can be done to eliminate or compensate for the defect. Special exercises and treatment may largely eliminate a lameness which has resulted from infantile paralysis. Surgery may dispose of a disfigurement. A hearing aid or training in lip reading may permit the somewhat deaf individual to get along much better than previously. But suppose there remains a handicap which cannot be eliminated—what then?

The need is for sensible and realistic recreational, social, and vocational guidance. Thus it is foolish for a child with a gross visual handicap to be put in a play group for baseball, or take courses involving a large amount of reading, or plan to become a librarian. The boy who has lost a leg in an accident will find it difficult, or perhaps impossible, to participate in many adolescent social affairs. Nevertheless, however, the handicapped person must somehow find recreation, schooling, companionship so that he can have success experiences and status. And he must accept levels of aspiration such that he will be contented with what is feasible for him. Otherwise there is frustration and the individual gives up, becomes bitter, or exploits his handicap to obtain sympathy and indulgence. If he only can find ways to make good, then his eager effort may more than compensate for his handicaps. Many famous people illustrate this fact. Byron was lame. Jane Addams was a frail girl with curvature of the spine. Franklin Roosevelt will doubtless come to the mind of everyone. But if the average crippled school child is to adjust to his handicap and even find exceptional strength of character in so doing, he will need help, as is illustrated by the following case.

Dorothy—a crippled child with excellent adjustment due to wise handling by parents and teachers. Age 17, grade 11.

Problem. Educational and vocational plans in view of a physical handicap.

Sources of Information. Mother, high school principal, family physician.

PHYSICAL, SOCIO-ECONOMIC, AND CULTURAL ENVIRONMENT

The family lives in a good suburban area. The home, although not elaborate, has every comfort. The neighborhood is one of homeowners in which the people are of good education and for the most part have been there long enough that they know each other well and have learned to adjust to and take for granted each other's strong and weak points. A friendly attitude, good manners, and tact are part of the culture pattern.

FAMILY CHARACTERISTICS AND HISTORY

Physique and Health. Both parents are middle-aged and well. There have been in the family, so far as known, no special cases of physical handicap or peculiarity. There are two older children, a boy and a girl, who are in every respect normal and healthy young people.

Abilities. The mother graduated from high school and the father from college. The two older children are now in college. The father is a successful businessman with a very comfortable income.

Interests. The family has the usual magazines, radio, and other "cultural equipment" of the well-to-do American family of the better class. They are social and entertain frequently.

Emotional Adjustment. The family seems to be a well-adjusted social unit. Naturally the daughter's handicap at first caused great perturbation. But as soon as the nature and incurability of her defect were clear, the parents discussed their problem with several specialists in the education of handicapped children, visited several schools for such children, and read widely on the subject. The careful plans thus made for the little girl's upbringing were calmly and unemotionally talked over with the two older children. The family thus early worked out its attitudes and ways of dealing with the problem, and now takes the matter in its stride.

Social Status and Relationships. As mentioned above, the family is social and entertains frequently. The father and mother belong to a number of clubs and other organizations. They have lived in this well-established neighborhood many years and are an accepted part of its life and activities.

Attitudes and Ideals. The parents are active in church work and in welfare organizations and have ideals of community service. Their greatest interest is in their children and they have been wise enough to use informed intelligence rather than simply affectionate impulse in dealing with them.

HISTORY AND PRESENT CHARACTERISTICS OF THE CASE

Physique and Health. The little girl has had from birth a marked spinal curvature or hunched back. The defect is apparently not remediable. Otherwise, physical development has been reasonably normal, although health has not been vigorous.

Abilities. Mental tests given her at various times in school have shown I.Q.'s around 135. Schoolwork is of high quality. She seems to have some artistic ability. She has an exceptionally pleasant, rather low-pitched speaking voice, a very charming smile, and a knack for clever talk and storytelling.

Interests. Dorothy is a great reader. She is also in her quiet way very friendly and social. She likes to paint and greatly enjoys designing Christmas cards, making posters, and doing other similar work.

Emotional Adjustment. Her parents have taught her to take pride in accepting her handicap without emotion and in finding satisfaction and contentment in what is possible for her. As long as she can remember, the attitude has been, "Well, one takes things as they are." She has never been sympathized with in a pitying way, nor has she been permitted special favors on the basis of her handicap. Rather, she was admired when she made nothing of it. She was encouraged to do the things she could do like the art work and the planning of decorations for social affairs, and was then praised for these accomplishments. These attitudes have been spread through the neighborhood by quiet conversation with other parents and requests that they have their children not baby the little girl, but help her when necessary and for the rest act as if her handicap did not exist.

Social Status and Relationships. The girl has always played with other children of her own age. As a result of the above-mentioned attitudes in the neighborhood, she seems to have had almost complete acceptance by others. In school she belongs to subject and hobby clubs and has been an officer in several of them; the school has quietly encouraged such recognition of her by the other pupils. She is careful, however, to avoid situations where her deficiency makes her participation awkward. She attempts only games she knows she can play, stays away from dramatics or any place where she will have to make a public appearance, and compensates by standing at the head of her class and by being so useful in the activities in which she does take part that both teachers and pupils go to her when they want to get things done.

Attitudes and Ideals. Dorothy takes pride in the fact that she takes her handicap in her stride and uses her head about the situation. For people who feel sorry for themselves and ask special favors, she has a quiet scorn. It is her ideal to show folks that she can make a go of it in spite of her difficulty.

APPRAISAL, INTERPRETATION, AND RECOMMENDATIONS

Dorothy is a girl who, in spite of a marked physical handicap, has, because of excellent ability and above all because of wise handling of her situation from very early childhood by her parents, achieved an excellent adjustment and worked out a life plan which is congruent with her abilities and her handicap. The recommendations are essentially an agreement with the plans that the girl and her family have already made. The girl would like to try going away from home to college because so far her handicap has kept her home more than many young people. Since her handicap makes normal social life in a coeducational institution not so easy as contacts might be in a girls' school, it has been decided that she will go to an eastern college for women, where she looks forward with keen anticipation to the contacts of dormitory life. And since she is greatly interested in both books and people, it is tentatively planned that she should prepare for library work. Both the parents and the school are writing the dean of the chosen college, explaining Dorothy's handicap and her adjustment thereto.[7]

In dealing with the handicapped, the central problem thus is to find ways in which they can have success experiences and achieve status, and to develop attitudes and aspirations congruent with reality. If this can be done, a handicap may stimulate and discipline a person so that he achieves far more than he would have done otherwise; it may even carry him to greatness. If not, an unnecessary lifelong stunting of the individual's potentialities or dilapidation of ability and personality is to be expected.

One of the writers knows two men both of whom have lost their right arm in accidents. One keeps away from people as much as he can, feels very sorry for himself, and after several years can write only clumsily with his left hand. The other is possibly a bit too ready to show how much he can do left-handed, and has won a regard he did not before have. Of two girls both stricken with the same crippling disease, one specialized in being a sympathy-evoking invalid and is now a querulous burden on her family. The other built herself up until she was one of the best women athletes in her city.

The Emotionally Maladjusted Individual.—As indicated in a preceding chapter, emotional difficulties may express themselves in many different ways. Here may be included (1) children who will not mix with others but prefer to play alone and live in a dream world of their own imagining, (2) children who have marked fears or obsessions, (3) children who are extremely moody or excitable, and (4) children who are delinquent in some peculiar and apparently compulsive fashion. About one point there can be no question: the number of children who need study as maladjusted is very considerable.

All too often a busy teacher impatiently turns from these children, regarding them as obstinately uncooperative or perverse, and gives her time to the pupils who are attentive and without bothersome oddities. Instead, she should regard peculiar conduct as a symptom of some hidden difficulty, and the odd child as therefore especially needing her help. To be sure, if left to themselves these odd youngsters sometimes "outgrow" their peculiarities. But in such instances the process of recovery can usually be hastened by tactful help from the teacher. All too frequently, with neglect the youngster grows worse. Or even if he learns to "act" normally, the underlying difficulties remain as a drain on his vitality, perhaps throughout life. A wise teacher will therefore give every such case very thoughtful consideration.

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[7] The above report describes the case as seen in high school some dozen years ago. After graduating from college, the girl married, now has two normal children, and apparently has made an almost perfect adjustment.

She should realize that she has a special responsibility to do so, because she is usually better able than anyone else who knows the child to appraise his behavior. Since she daily sees many children in the same room under the same general circumstances, she has a perspective for judgment as to whether a given child's behavior really is unusual; parents, especially if they have only one or two children, are often very poor judges because they lack this perspective. Many little incidental happenings the understanding teacher passes by with a smile, but serious symptoms (which to the uninformed might seem of no consequence) are seen in their real significance. All too often, a conventional mother does just the reverse; she is much upset about a boyhood scrap which is essentially healthy, and dotes on the boy who stays too much at home.

The way in which conventional teachers misjudge symptoms—but may learn better—has been well shown in an investigation of the results of courses in child development. Before taking these courses, the teachers considered serious such conduct problems as untruthfulness, cheating, obscene notes. At the end of the course they stressed the seriousness of easy discouragement, fearfulness, unsocial withdrawing (4).

It is of further importance for the teacher to remember that oddities of conduct have an understandable cause if the child's history can be traced. Once the cause is found, remedial steps can be taken which should bring about some improvement and often real elimination of the difficulty. For no other type of child is the case study technique so essential, because the compulsions driving these children are usually to be found in the background dynamics of the personality—and usually in essentially social situations at home, in the neighborhood, or at school. Often the case is too complicated for a teacher to handle adequately by herself, any more than she can expect to diagnose and cure a physical disease; the help of a psychiatrist or clinical psychologist is needed. The teacher's task in such cases is to locate the child who needs special study, if possible see that he has it, and help in treatment. But many mild cases she can understand and handle herself. If she will only treat causes, not symptoms, and deal constructively with the underlying dynamics of the situation, she can often do a great deal. The following case study will illustrate how many influences may combine to bring about emotionally abnormal behavior.

Pauline—age 16, grade 10.

Problem. Episodes of great emotional excitement during thunderstorms, and chronic emotional excitability.

Sources of Information. Father, high school vice-principal, family physician.

PHYSICAL, SOCIO-ECONOMIC, AND CULTURAL ENVIRONMENT

The girl lives in a comfortable small home in a New England town. The people in the neighborhood are quiet, reserved New Englanders.

FAMILY CHARACTERISTICS AND HISTORY

Physique and Health. The father is a tense, overactive person, but seems to be in good health. The mother died shortly after the birth of the girl. The other three children are boys. The paternal grandfather was also tense and overactive; a collateral branch contained many eccentrics.

Abilities. The father is a physician. There have been other professional men in the family. The mother left school at the end of the eighth grade. The older brothers did well in school. Two are now in college; one is a college graduate.

Interests. The family has the interests of educated New Englanders; there are good magazines and books in the home. The family is relatively reserved, and there is not much social life, especially since the mother's death.

Emotional Adjustment. As indicated, the family is reserved. The mother's death was an emotional shock. Since the father's work takes him frequently away from home, the family life has been much of the time without guidance. There is a housekeeper.

Social Status and Relationships. As stated above, social status in the community is excellent. But social contacts since the mother's death have been relatively lacking. The family goes to church irregularly. The father finds social contacts in his profession; the older boys have their own social existence.

Attitudes and Ideals. The family takes pride in itself as an old New England family and in New England attitudes of reserve and intellectuality.

HISTORY AND PRESENT CHARACTERISTICS OF THE CASE

Physique and Health. Pauline was an eight-months baby and has never been strong. She is of the same nervous temperament as her father, and has had two attacks of chorea.

Abilities. Tests several years ago showed an I.Q. of 117. If nervousness had not interfered somewhat with concentration, she might have scored higher. She is both physically and intellectually very active, and somewhat erratic and likely to jump from one topic to another. Her schoolwork has been good.

Interests. Pauline is a great reader. She is, nevertheless, very active when she is well enough to be about. Perhaps partly because she has no mother and has three older brothers, she associates mostly with boys and is of the tomboy type. However, her attacks of chorea, and at other times a condition which seems to be akin to nervous exhaustion, make it necessary for her to stay at home and sometimes to rest in bed.

Emotional Adjustment. Pauline is very lively and open in disposition. She seems to crave expression and affection which she does not have in her own home. And because of the relatively abnormal home life and lack of social training, she does not seem to know how to get along with people. Therefore, her feelings are frequently hurt. Since she has reached adolescence, these difficulties have increased.

Emotional difficulties which have been somewhat latent have recently come to a head. Whenever there is a thunderstorm (and at certain times of the year they are frequent in the locality where she lives) she is overcome by fear, trembles, often has diarrhea, and is exhausted for some time after the storm has passed. She seems much distressed and ashamed about these episodes, for in most other respects she is courageous. It can be well understood that these episodes are a problem when they occur at school and distressing when they happen at home.

Inquiry showed that they began the previous summer during a visit to a home where a distant relative had committed suicide. The family of the suicide consisted of eccentrics, each of whom blamed the others for the tragedy. It took three days for the clan to gather, and during that time Pauline was in the midst of a group of excitable, unstable persons; there were episodes of weeping, angry recriminations or remorse, and fear. Since such emotional manifestations were unknown in her own home, these displays made a special impression upon the girl. She slept in a room with two women, one of whom declared she could not sleep a wink as long as the corpse remained in the house. The burial ceremony was the first the girl had ever attended. When she reached home after the service, an unusually severe thunderstorm broke. She suddenly displayed intense fear, screamed, acted "like a maniac." When the storm had passed, she had to be put to bed in an exhausted condition.

Social Status and Relationships. As was indicated above, Pauline's relationships with other people have almost from the beginning of her life been unusual. There have been no women or girls in the family. Periods of illness have interrupted schooling and the companionships which develop there, and have taken her out of play groups. The fact that her first companionship was with her older brothers has led her into boyish types of play and many boyish attitudes. She has never learned to get along easily with others of her own sex and age.

Attitudes and Ideals. The girl has the New England pride in reserve and in accomplishment. Her plan is to go to college and she hopes to be a teacher. Her difficulties are, under all these circumstances, exceedingly distressing to her.

APPRAISAL, INTERPRETATION, AND RECOMMENDATIONS

Pauline is a girl constitutionally high-strung who comes from an emotionally unsatisfying home and social situations. These emotional tensions were brought to a head and exploded by an emotionally surcharged situation. Reasoning with the girl does no good, nor does reproof or disdain—in fact, such attitudes have already been taken by her family and rather add to her distress. The recommendation was threefold. Every effort was to be made to build up her physical health. Better social adjustment was to be sought. And there was to be a more friendly, calm, objective handling of emotional episodes.

The first practical step taken was to arrange that the girl spend a summer in a girls' camp in an area where thunderstorms were very rare. There a special effort was made to build up her health and also to develop better relationships with other girls by sports, handicraft, and other camp procedures. Finally, upon her return from camp, a calm and quiet objective handling of emotional upsets was made the rule. Because of her constitution and her habits of life thus far, some continuance of excitability was expected. With careful handling and the passage of time into adulthood, a reasonably well-adjusted personality was hoped for.

Comparatively, the above case was simple and straightforward. The symptoms were so striking that they could not be overlooked; the immediate causation was a dramatic episode about which the girl was willing to talk freely, and the family had both the means and the intelligence to take any reasonable steps for treatment. More often, the situation is far less favorable. The chief symptom may be that the individual withdraws from notice as much as possible. The important causation may be a long series of minor episodes which no one specifically remembers. In the background may be elements of sex or of injured pride about which the individual will not talk and instead dissimulates. Part of the trouble may be limited means which prevents even a short vacation from the family, or obstinate dullness which refuses to understand simple causes of emotional conflict. The more these difficulties are met, the more it is important to distinguish real causes from the often-misleading symptoms, and have resourcefulness in treatment.

The Delinquent.—It must first be stressed that this classification cuts across almost all others, since a delinquent may be in ability anywhere from feeble-minded to above average, physically handicapped or superior, emotionally unstable or stolid; and he may come from a poor or occasionally a good neighborhood. The habitual delinquent usually shows handicaps or peculiarities in a number of categories. But no one factor accounts for him. There is no "delinquent type." Nor can a school shrug off such problems by smugly blaming the home for childhood misbehavior, even though many of the causes may reside there. Usually the school is partly responsible. Delinquency should be regarded as a symptom of a number of unfavorable factors operating in an unfortunate concomitance. And for any constructive dealings with a delinquent the total patterns of underlying causation, not simply the delinquency itself, should be considered. To do so is not easy.

The delinquent has to be dealt with, somehow. A school can largely neglect a dull child or a bright one, or even one ill. But a delinquent is a person sufficiently in conflict with society's rules of conduct so that something *has* to be done. Conflict tends to arouse feeling on both sides; the school thus tends to become angry with the delinquent instead of trying to understand him. It is therefore especially needful that cases of this type should be considered.

In the first place, it should be clear that delinquency is a social phenomenon; a delinquent is a person who is doing something which society says he should not—in the classroom, on the playground, as he passes attractive objects in a store, or with a member of the other sex. Consideration of the socio-economic and cultural environment here becomes especially important. Chart 49 is of interest in this connection. It shows that juvenile delinquency is exceedingly high among youngsters living near the center of a city (a fifth of the boys living there may have juvenile court records), then rapidly drops off as one moves toward the suburbs. The slum areas, where delinquency is highest, are characterized by crowding and lack of privacy, high rates of illness and defect, poverty that prevents legitimate satisfaction of childhood desires, juvenile social groupings in gangs, and a neighborhood culture which looks upon delinquent acts as not unusual but even to be expected and which may regard the successful gang leader as its hero-type. Such a section is likely to be an area in transition and thus in disorganization. People of another racial, geographic, or socio-economic group are moving in, and there are conflicts and jealousies and confusions as to standards of conduct. It is an area of adult as well as juvenile crime.

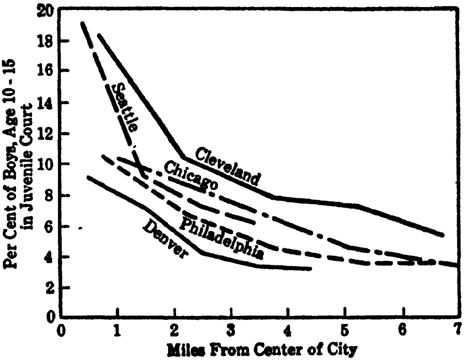

CHART 49.—Juvenile delinquency rates among boys age 10 to 15, by distances from the center of five cities. Note that the rates are uniformly high in the central area of these cities. (From Frank K. Shuttleworth, *The Adolescent Period: A Graphic and Pictorial Atlas,* National Research Council, 1938. Based on data of Clifford R. Shaw and Henry D. McKay [52].)

In such areas, one would expect to find many families below average in health, abilities, social adjustment, and standards of conduct. But delinquency would be expected especially in families even somewhat below the average of whatever neighborhood they may be in, in one or more of these respects. And this is likely to be the case. Often the home is disturbed in some way. There may be boarders, perhaps not too desirable in character. Both parents may work and leave the children without adult supervision. A night worker, needing sleep during the day, may object to normal childhood activities in the home. There may be gross incompatibilities, perhaps divorce or desertion. If so, one must be on guard against superficial thinking. The important item is not the mere fact of a "broken" home but the causes which broke it. Other members of the family may be immoral or criminal.

Finally, there is the question as to characteristics of the offenders themselves, explanatory of their delinquency. To distinguish these characteristics from the influences of neighborhood and family above mentioned, comparison should be made of delinquent and non-delinquent young people from the same type of neighborhood and home influences, to see what makes some persons delinquent and others not who have the same socio-economic and familial environment. Or delinquent and non-delinquent brothers or sisters in the same family may be compared. Chart 50 summarizes a study of the last-named type.

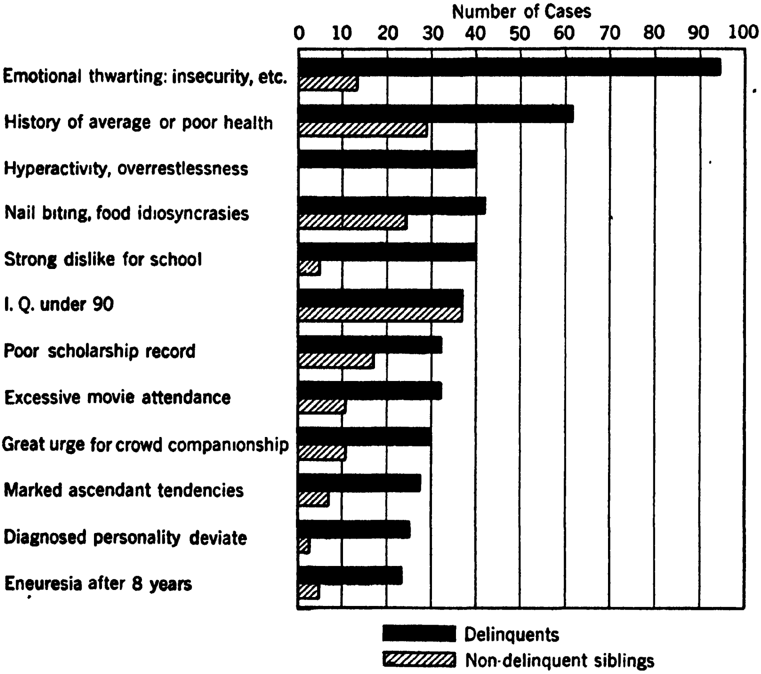

CHART 50.—Sample contrasts between delinquents (mental defectives excluded) and their non-delinquent siblings, 105 pairs of cases. The most distinguishing characteristics of the delinquent are feelings of emotional thwarting, insecurity, rejection, inadequacy, inferiority, discomfort about family disharmonies, jealousy, guilt, etc. (From Shuttleworth [65], based on data of Healy and Bronner [30].)

The most distinguishing characteristic of the delinquents appears to be feelings of emotional thwarting, insecurity, inferiority, and jealousy. Delinquents are also differentiated from their non-delinquent siblings by excessive activity, restlessness, and strong dislike of school. In the chapter on emotional development it was emphasized that frustration often caused irritability, belligerency, and a regression of behavior to lower levels. It may also be remarked that people do not usually cheat in a game unless they have difficulty holding their own otherwise. A picture emerges of a person who, because of unfortunate circumstances or handicaps of some sort, lacks satisfaction and status; he finds that these desires can be met—or at least these feelings released—by disapproved acts. An illustrative case will make these generalizations clearer.

Milly—a girl delinquent as a result of poor socio-economic and cultural environment, subnormal mentality, unattractive person and personality—and the discovery that she can attract attention by petty thefts, profanity, and sex delinquencies. Age 14, grade four.

Sources of Information. Teacher, principal, mother, juvenile court, older sister.

Problem. Poor schoolwork, petty theft, profane and obscene talk, suspected sex delinquencies.

PHYSICAL, SOCIO-ECONOMIC, AND CULTURAL ENVIRONMENT

The family of six lives in four rooms of a tenement in a company mill town in the South. The company is known for its lack of interest in its employees. The town is shabby, and the company houses and tenements are not in good condition. The mills are the only industry. Most of the employees have moved in from the hills for what seemed to them a good wage, only to discover it to be grossly inadequate for living in town. Many of the adults are illiterate.

FAMILY CHARACTERISTICS AND HISTORY

Physique and Health. The father is a thin, underweight, tubercular-looking man, with a slow gait and lisping speech. The mother is overworked, chronically tired, and subject to attacks of depression.

Abilities. The parents' education consisted of irregular attendance in a one-room mountain school. The father is regarded at the mill as not a capable worker. The mother is brighter but somewhat queer. None of the children have finished elementary school.

Interests. The father finds his great interest in sour complaints about the injustices he considers done him. The mother and oldest daughter seem spiritless and without interests. The interests of the second and third daughters are largely in their sex adventures.

Emotional Adjustment. The father is a chronic complainer. He often trembles with rage as he talks about his grievances. He is full of prejudices. On at least one occasion he was a member of a lynching mob. He is savage in his statements about Negroes, Jews, communists, and the town's liberal clergyman. He was a great admirer of Huey Long. Occasionally he comes home ugly drunk and mistreats his wife. The mother is depressed but apparently resigned to her fate, as is the oldest daughter. The next two daughters with their special source of income have tawdry finery and seem to consider themselves economically superior to the other members of the family.

Social Status and Relationships. The father and mother both work in the mills. Care of the family is left to the oldest girl. The second and third daughters also have worked in the mills from time to time but have had no steady employment; they have earned money as prostitutes when funds from other sources were lacking. The family is not well regarded even in the run-down section of town where it lives.

Attitudes and Ideals. A family from the hills has found a simple code of morals and fundamentalist religion gone to pieces in mill-town industry. It has practically nothing left except resentment and bewilderment.

HISTORY AND PRESENT CHARACTERISTICS OF THE CASE

Physique and Health. Milly has always been underweight and round-shouldered. Recently, however, she has reached puberty and has filled out somewhat. She is usually listless and seems to have a chronic cold.

Abilities. Milly entered the first grade at 6, stayed two years in the first and two years in the second, and at 14 has progressed only to the fourth grade. It must be admitted that the schools are poor and that she has frequently been absent. She seems distinctly unhappy over her failures, and feels that she will never be able to do anything acceptable. However, on a Binet examination she made an I.Q. of 80. This rating is considerably higher than her inadequate schoolwork would suggest.

Interests. For the most part Milly seems to be too listless and dull to have many interests. She tends to stand about and watch other children play, although she does get some enjoyment out of playing with younger children. Recently she has seemed increasingly preoccupied, and this seems to be in connection with new-found sex interests.

Emotional Adjustment. Until recently Milly's attitude has been one of listlessness and discouragement. She seemed to withdraw from all types of activity or participation. Recently she has been more lively, and resentful if interfered with.

Social Status and Relationships. For the most part Milly remains somewhat apart from other children. Occasionally she has been detected taking small objects such as pencils or pennies that did not belong to her. And she seems able to give no explanation as to why she steals. However, the pennies do serve to purchase cheap candy for the younger children with whom she has played. Recently she has become an active conduct problem: she has slapped another child who made disparaging remarks about her, gained notoriety and attention by profane and obscene remarks, and talked back to the teacher. There have been rumors that she has been having sex experiences. A week ago she was detected stealing a blouse from the counter of a store. She explained this act by saying that boys liked her and she wanted to look well, but had no money.

Attitudes and Ideals. Milly's general attitude may be described as long-existing discouragement in school and in her relations with other children, which has been reconstituted by the new urge of sex and the discovery that she can secure attention by misbehavior. Resentment at any interference with her first "success" experiences is also important.

APPRAISAL, INTERPRETATION, AND RECOMMENDATIONS

Milly may be considered basically a product of poor socio-economic conditions and cultural disintegration. Her handicaps of poverty, disintegrating family, poor health, and poor ability were too much for her, until she discovered the possibility of getting attention by unruly speech and actions and by sex.

Recommendations in such a case are indeed difficult. All the circumstances being as they are, the case seems now almost hopeless. If earlier schoolwork had been so modified that Milly had had success experiences and she had been helped also in making good with other children of her own age, the respectable industry of her older sister might ultimately have been attained. As it was, the recommendations were that she be given some special help in school and some special vocational training, perhaps for work in the mills, which would teach her self-support. Another suggestion was that a recently established playground make a special effort to interest her in certain games and sports and help her to competency in them, so that she would establish herself with other children of her own age. The older sister was talked with. She seemed somewhat to understand the problem. But almost everything seemed to be against Milly.

In the light of the above brief discussion and illustrative material, how may the important facts regarding delinquent individuals be summarized? Usually several of the following factors are operative: (1) The individual lives in a "delinquent" district and has associations with juvenile offenders. (2) He comes from a family in which there is dissension and a breakdown of standards of conduct. (3) He is dull or otherwise handicapped, and has for years been trying unsuccessfully to make good in a school system where there is a premium on academic learning, for which he has little ability—although he may have manual skills which should be developed. (4) He has largely failed to achieve status with others of his own age. And (5) emotionally he is unhappy and frustrated because of all these failures to make good. He finds that in delinquency he can escape from school and other situations in which he has been unsuccessful, obtain attention and status and desired objects or experiences hitherto not to be had, and find a release for feelings of antagonism toward his previous difficulties. The delinquent is a victim of a constellation of unfavorable circumstances. Delinquency develops because it is the best method the youngster has been able to find to satisfy his desires. It is the task of those who hope to do constructive work with a delinquent to help him find better solutions to his problems. Simply to try to stop the undesirable solutions may be worse than useless; it adds resentment to frustration.

The above illustrative case and generalizations must not leave the impression that all delinquents are sorry inadequates from the wrong side of town. As mentioned at the beginning of this section, delinquency may develop in youngsters of very diverse characteristics. The most troublesome boy in one school was also the brightest and the most attractive in appearance. Vindictive bitterness because his father (as a result of a frame-up, the son declared) had served time in the penitentiary was the origin of his malicious conduct. An adopted daughter of wealthy foster parents was guilty of persistent shoplifting. She had no need of the objects taken, and to everyone including herself these acts seemed irrational and inexplicable. Very strong feelings of inferiority because of her recent discovery that she was an adopted child, and jealousy of the greater ability and popularity of the own children in the family, were found to be back of her behavior. A very attractive high school girl from a drab restrictive home seemed guilty of wild escapades. They were found to be largely imaginary and, in so far as real, largely excusable when all the circumstances were known. (When her father locked her in her room to prevent her going to a school dance, she crawled out a window and went in spite of him.) A 6-year-old boy seemed already embarked on a delinquent career; his twin brother was a smug little angel. The delinquent was excessively overactive from an earlier attack of poliomyelitis, was obviously disliked by the father, and was continually contrasted unfavorably with the sanctimonious twin brother. These cases are indeed various—but understandable when the underlying stresses and circumstances are known.

The Educational Dilemma, and Means for Dealing with It

This chapter has reiterated, by general statement and concrete example, this theme: that each pupil is a unique individual, different from every other, and presenting individual problems which must be understood if there is to be optimal development. But in the schools of this country there are thirty million pupils. Education is thus a tremendous mass undertaking. To state that there must be both mass education and individualization seems to present an impossible dilemma.

It is better to say that there is here presented a fascinating challenge to educational ingenuity and resourcefulness. Methods of mass education must be devised which will nevertheless give maximal opportunity for the development of desirable individuality. It can be done! The following important developments now under way in American education are moving toward this end.

In the first place, schools are slowly coming to recognize that they should know something about each young person with whom they deal not simply as a pupil in a class but as a total personality. A pupil is not merely a learner of arithmetic or history. In school his development in interests, social adjustment, attitudes and character, and methods of work is more important. But most of the important things in a child's life happen "off-stage" so far as the school is concerned. The school *should* be more concerned about what a child is and becomes out of school than about his work in class. In consequence, the school must increasingly develop means for knowing about each child as a total person in his own world, and especially know how he figures among his fellows and in his home. At least a minimum of this knowledge is the essential prerequisite for any modern educational program which really recognizes individual needs.

A very useful minimum of such information can be obtained far more easily than most teachers realize. A desirable first step is that somehow the record system should be broadened sufficiently to include some information of the type here suggested—to include more than simply grades or other indication of conventional schoolwork. Given half a chance, the pupils will do most of this recording themselves. Thus, one successful high school teacher asks each new student to put on a 4-by-6 card his name, age, grade, home address and telephone number, his nationality and church, father's occupation, names and occupations or activities of any brothers or sisters, his own hobbies, ambitions, clubs and honors, work done after school, and names and addresses of two close friends or relatives in the school.[8] The teacher then visits the home of each pupil, talks with the friends in the school, and adds any important further information to the card. Soon she has an excellent understanding of each youngster (36). Increasingly, schools are expecting teachers to visit homes.

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[8] A system with this point of view, recently developed by one of the writers and now in use in his college, asks each student when he enters college to list briefly on the first page of a cumulative record folder his major interests, hobbies, travels, activities, and work experience. When he enrolls for each succeeding quarter, he must present to his adviser a simple 3-by-5 card on which appears not only the courses he proposes to take for the next quarter but also the activities in which he proposes to engage, any work he plans to do, and other plans for that period. At this time he also enters on the cumulative

Once such a record is started, a little shrewd observation by the teacher as to how children get along with one another in classrooms and on the playground or in social affairs, and occasional quiet inquiries of other children and of two or three trustworthy adults in the community who know the family in question, will enrich it and keep it up-to-date. By this means a broad understanding of the pupil as a person may be obtained. Without such knowledge, the class is a group of stranger children.

For more adequate study the help of specialists is of course desirable—school nurse or physician, visiting teacher, counselor specialists, psychologist or psychiatrist. If available, such people can help greatly. In cases presenting special problems they may be essential. But the first requisite is more adequate knowledge of the children on the part of the teacher.

In the second place, instructional materials and procedures are increasingly being so organized as to be readily adjustable to the needs of each pupil. Now there are special materials for sight-saving classes, special classes for the subnormal. Increasingly, the writers believe, there will be flexibility in promotion so that children of superior maturity may be moved ahead more rapidly than the average. In class there can be such variety of possible work that each pupil can do somewhat as he desires and proceed at his own pace. With ingenuity all this can be done without any impossible burden on teachers or educational facilities. In fact, it might be said that the problem is to free each pupil from unnecessary routine and to give him maximal means and opportunity for self-education; in proportion as this is done, the task of the teacher will be lightened.

More important will be a broadening of the concept of education. In both college and high school, stimulated by the war, there will be increasing recognition that work experience is educative and should be recognized by the school as such.[9] The writers believe that worth-while extracurricular activities should also be thus recognized. It is absurd that the school should give credit for perfunctory reading of dramas,

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record the grades he made the last quarter and the extent to which the other plans for that quarter were carried through.

[9] Work projects may be part of a course. Thus in the course in educational psychology of which one of the writers has charge, industrial arts majors have made exhibit cases and stands, fine arts students have prepared charts, and groups of students have helped in school surveys. (See Social and useful college classes, *School & Soc.*, *55*, 117–120.) The college has a course which specifically gives college credit for work which may be done when the student is not on the campus.

but refuse credit for the much more educative work of planning and acting in a performance of a dramatic society.

In the third place, there will be much greater utilization of the social forces within each pupil group for educational purposes. In any natural child group the children educate one another; they adjust to each other's abilities and personalities, stimulate each other, and teach each other. Consequently, the group can be made a powerful influence for the development of desirable individuality.[10]

For a number of years, students in educational psychology at the writers' college have been asked to write accounts of the most educative experience they have had. Time and again they report some group undertaking which was initiated and carried through by the young people themselves, and they tell about how from this play they presented or concert they gave or trip on which they went, they not only learned much but also achieved new confidence and new ability to work with others.

Finally, as school, home, and community come to work more closely together and to understand better their common problems, many difficulties with which the school now wrestles, and other difficulties which trouble the pupil, will not occur. Community welfare projects may accomplish a great deal; it has already been pointed out that problem children usually come from problem neighborhoods. Improvement in community recreational facilities will decrease the number of delinquents and of socially isolated pupils. Programs of parent education may do much. Church groups, organizations like the Boy Scouts, public-spirited fraternal organizations, business concerns intelligent enough to see that their success is bound up with the welfare of their locality—all may help in bringing about favorable circumstances for the development of each young person in such ways as may be best for him.

The writers know of business concerns which supply their communities with visiting nurses, playgrounds and community halls for both children and adults, and training programs for the industry in coordination with the public schools. The schools may take the lead in such wide-reaching undertakings. Thus in Parker School District, South Carolina, the schools have transformed the community; simple landscaping of homes as well as schools and other public buildings, community programs for adults as well as young people, a maternity center in which some of the high school girls work—this whole program has come from the leadership of one vigorous school superintendent.

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[10] In the course in educational psychology already referred to, most of the time is spent in social cooperative work around large tables. Not only is the usual learning of subject matter shown by tests to be as great as in conventional classes, but projects such as were described above are carried through. Further, students learn much more about each other; gain in acquaintance is over twice what occurs in the usual college class. *And* the course is easier to teach—with a little guidance and friendly supervision, the student groups happily keep themselves going. The experiments of Lewin with elementary school groups should be recalled in this connection.

Mass education in the world of today need not hamper the effort to broaden and individualize educational opportunities. Rather, it may make available greater educational expertness and more varied total resources. The apparent dilemma presented by the need for an individualized development in a system of mass education may be merely an opportunity as yet largely unrecognized.

SUMMARY

Modern education recognizes each child as a distinct total personality, living in a complex world which in manifold ways is shaping him. His behavior as a pupil in class is only one part of his total life, and the school is only one special environment of the many environments in which he lives. To do its job, the school must extend beyond itself.

For adequate study of the child, the school must know three things with which it often does not now concern itself; it must know at least a little about the home and neighborhood from which the child comes, about his family, and about his life outside of school. A systematic scheme of case study, comprehending these neglected areas of information, is desirable if children are to be really understood. And sources of information beyond the school are obviously necessary if such information is to be had. From all this information, the child as a dynamic personality, trying bravely to make good in his world, may at last be seen. It is impossible thus to see him unless these steps are taken.

Children are of many types. Types common enough and problem-presenting enough to need special comment are the brilliant and the dull, those emotionally unstable or greatly handicapped, and those who are persistently delinquent. A realistic understanding of the average child in his true "averageness" is also very important.

With thirty million pupils in the schools, each presenting his or her own individual problem, an impossible dilemma seems presented. But this dilemma should be regarded as only a challenge to American resourcefulness and ingenuity. It is believed that with ingenuity not only can these individual problems be reasonably adequately dealt with, but teaching can actually be made easier in consequence!

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PART TWO

The Guidance and Fostering of Learning

CHAPTER XI

Learning: Its Course and Its General Nature

Foregoing chapters have attempted to picture the manifold and marvelous processes of human development over the first 20 years, and to give some sense of the total complex yet unitary nature of child personality at any stage of that development. Certain phases of this total development, such as increase in height and weight, are quite clearly processes of physical growth. Other phases, as in the development of attitudes, would seem largely (though by no means entirely) the result of experiences the individual has had, and might be called learned. A modern school is concerned about all phases of child development; it is concerned if a youngster's weight does not increase as it should, and may provide a recess lunch. But a school is most concerned about those phases which can be greatly affected by experience (and experience which the school can provide) like ability to read, to prove a theorem in geometry, to use tools, to get along with people, to keep one's temper, and to be tolerant. Unfortunately, a conventional school limits its efforts largely to the first two types of ability. But all these traits may there be developed. The remainder of this volume is concerned with these problems of learning.

For realistic, clear thinking it seems first of all desirable to consider sample investigations as to how learning progresses, and what the general nature of the learning process is. This chapter presents such relatively concrete illustrative material.

SAMPLE STUDIES SHOWING RATE OF PROGRESS IN LEARNING

Earlier in this book, in attempting to gain understanding of processes of growth in physique, abilities, interests, and other traits, curves showing growth and change in these traits over a period of time were found very helpful. Presumably curves showing progress in learning might be similarly of value in considering that topic. The next few pages present sample curves showing progress in various types of learning.

The General Trend of Progress in Learning in School.—The practical first question is as to typical progress through the school years in representative school subjects, since from such curves some idea may be obtained as to how the schools are now doing their work.[1] Chart 51 deals with a very straightforward and practical problem indeed: progress in the elimination of errors in English composition from the third grade into college.

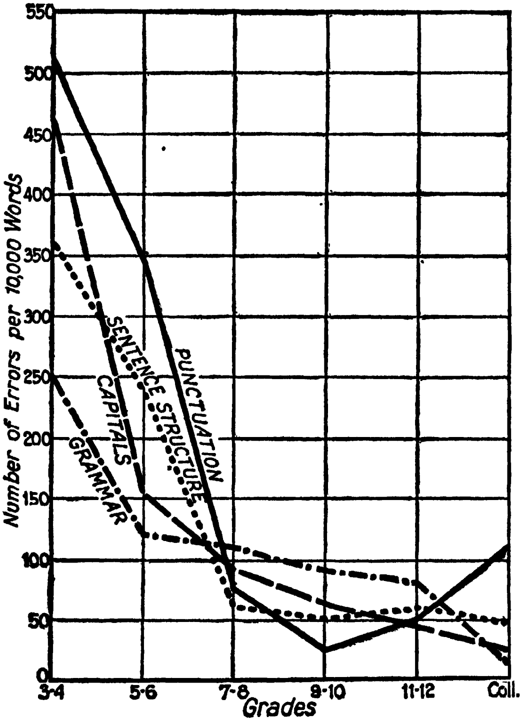

Chart 51.—Decrease in errors in punctuation, capitalization, grammar, and sentence structure from the third grade through college. (From unpublished data of Dr. J. T. Seaton.)

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[1] The first curves to be presented in this chapter do not show the progress of the same individuals from year to year but instead exhibit the general progress made from grade to grade by comparing results from these grades at a given time. Most of the growth curves in the first part of this book were based on analogous data; thus the weights of a great many children of different ages were obtained, and from the average for the different ages a curve of growth in weight was drawn. The method has its risks and its limitations, but it gives valuable first evidence as to general trends.

The methods used in gathering and compiling these data were simple and straightforward. Samples of the written work of pupils in several elementary and high schools were first obtained, as well as papers written in various college classes. These papers were carefully gone over, and all errors in capitalization, punctuation, grammar, and sentence structure were checked. The errors of each type on each paper were then counted, and also the number of words in the paper so as to take account of its length. The results for all pupils in each grade were combined.

For each grade, the number of errors of each type *per 10,000 words* was next calculated by slide rule, so that comparisons could be made from grade to grade in spite of different amounts of material obtained from each grade. To condense the material, results from adjacent grades (such as Grades 3 and 4) were combined. The construction of the graph was then an easy matter. The figures at the bottom show the grades, and those at the left the errors per 10,000 words; thus in Grades 3–4 there were 505 errors in punctuation per 10,000 words. Dots were made at these points, and these dots joined by lines.

The most striking progress is evidently made in the first eight grades; such slight further gains as appear thereafter may conceivably be the result more of poorer students leaving school than of English instruction in high school and college. Analysis showed that many of the "errors" after the eighth grade were on nice points which liberal authorities would not consider errors at all. The increase in errors of punctuation in the last years of high school and in college may have been due partly to haste and partly to use of more complex sentence structure.[2] Everything considered, the curves suggest the possibility that the mechanics of English composition may, like handwriting and arithmetic, be handled entirely in the first eight or nine grades. It is surely clear that such curves, showing progress in some phase of a subject through the school years, may be of great interest.

Chart 52 shows progress in skill in reading from the first grade to college, as indicated by the number of "fixations" of the eyes per line of print. Since the better readers make fewer fixations, the smaller numbers have been put toward the top; thus progress is shown by a rise in the curve.

A brief explanation of the eye movements in reading is here necessary. As an individual reads a line of print, his eyes glance along it. They do not move in a single, even sweep, however, for while the eyes are moving, nothing is seen. Instead, the line is covered by a series of quick short movements, each followed by a fixation when the eyes take a snapshot, so to speak, of that part of the line at which they are then looking. Poor readers must make many such stops on each line of print because they have to look at each word and often at each syllable before they can make out the words and sentences. Good readers can "take in" two or three words at a glance, and therefore require few fixations per line. Thus, progress in reading skill is accompanied by a reduction in the number of fixations per line.

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[2] The increase in college might also have been due to unwise efforts to teach niceties of punctuation—efforts which only confused the students.

The results shown in the graph were obtained by means of an elaborate apparatus for taking photographs of an individual's eyes while reading. However, rough observations of the nature of these eye movements may be easily made. If, while some obliging friend is reading a book, a mirror is placed on the page he is not reading, and the observer stands behind in such a position that he sees the reader's eyes in the mirror, the small, quick movements of the eyes across a line of type, and the long "return sweep" from the end of one line to the beginning of the next, can be noted.

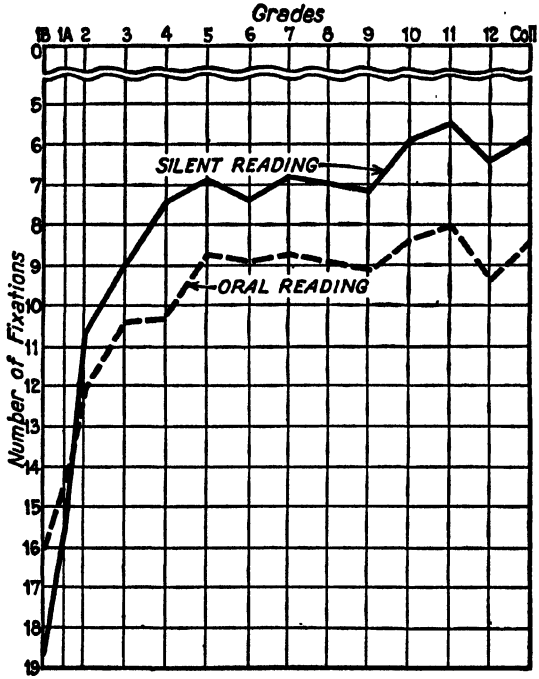

Chart 52.—Grade medians for eye movements in silent and oral reading: number of fixations per line of type. (From G. T. Buswell, *Fundamental Reading Habits: A Study of Their Development,* University of Chicago Press, Chicago, 1922.)

The "oral reading" referred to in the graph means reading out loud; silent reading means reading to oneself. At least 95 per cent of all reading is of this latter type; when one reads for meaning he need not say the words any more than one needs to name the objects in a picture in order to see them. Silent reading can thus be much more rapid than oral reading.

The graph shows that when children in the first semester of the first grade read orally, their eyes average 16 fixations for the average line of print. Silent reading by these same youngsters takes 18.6 fixations per line. By the second grade, however, silent reading becomes distinctly more rapid than oral; the children can read to themselves (or "see meanings" faster than they can say words. The skills involved in oral reading become "set" by the fifth grade; the rest of the curve shows a level or a limit, presumably due to the fact that it is possible to speak comfortably and intelligibly only about so fast. Silent reading also shows a decreasing number of fixations up to the fourth grade, after which there is a level, primarily because of a lack of motivation to learn to read faster. Beginning in the tenth grade, the curve shows another increase in speed of silent reading due in part to the elimination of poorer readers but also due to improved reading speed needed for longer high school assignments. It will be shown later that still more efficient levels of reading may be attained if the student sees the need and is taught the necessary work skills.[8]

To indicate progress in a secondary school subject, Chart 53 is included; it shows the increase in Spanish vocabulary from first- to eighth-semester Spanish classes as determined by a 100-word vocabulary test. The rise is fairly consistent, as indicated by the heavy dotted line connecting the medians. However, the totals at the bottom of each column show clearly the process of selection which is going on; there were in semesters 2, 4, 6, and 8, respectively, 800, 472, 457, and 83 students. The total length of a column shows the total range of scores in that semester. Some students in the first semester are thus shown to score above the median for the eighth. It is clear that the mere dropping out of the poor students might account for much of the rise in medians.

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[8] There is, of course, more to reading efficiency than improvement in rate of reading. Improvement in comprehension, learning to read to answer a purpose and doing so with judgment (as in reading war news releases), and development of a liking to read a good quality of literature will not show up in an eye-movement curve. The "plateau" in this eye-movement curve may thus mean only that a leveling off has occurred in one characteristic, rate of reading, whereas here unmeasured aspects may actually be showing growth in high school. This is an important point to remember in interpreting other learning curves.

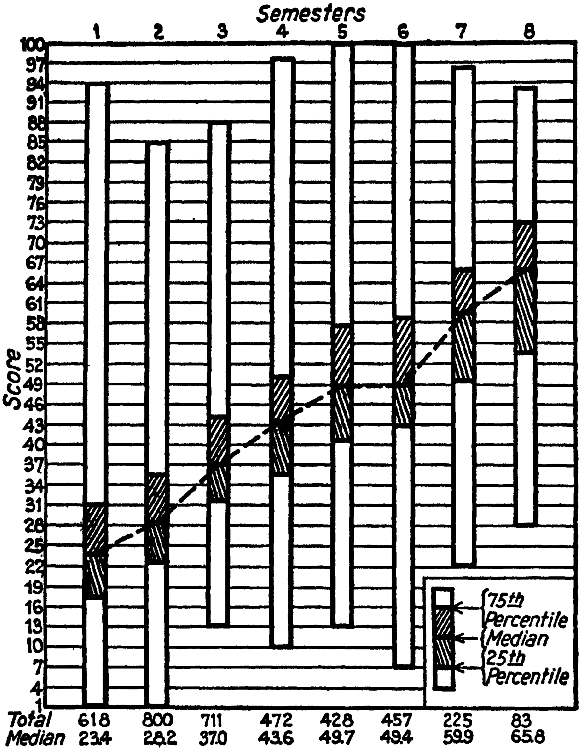

Chart 53.—Showing overlapping, variability, and growth curve in Spanish vocabulary through eight semesters of high school. (From Henmon, *Achievement Tests in the Modern Foreign Languages,* p. 141. By permission of The Macmillan Company, publishers.)

Chart 54 shows how artistic skill and appreciation develop in children and also indicates some of the factors which influence their development. Growth in ability to draw was measured by having the children make certain drawings and then rating them carefully as to merit. Appreciation was measured by a very simple and practical aesthetic choice test; the pupils were asked to mark the curved line, of several at the top of the test page, which they considered most graceful; to decide which of several pictured electric light brackets was most attractive; to decide which dress pattern would be most appropriate for a short stout girl. In the superior school, which was in a very good neighborhood, a special effort was being made to develop appreciation. The second school was average and in an average neighborhood, and the third school was poor and in a slum district.

First to be noted is the early rapid development of appreciation in the lower grades of the good school. Apparently the special effort to develop artistic sensitivity in these children, and the better home in-

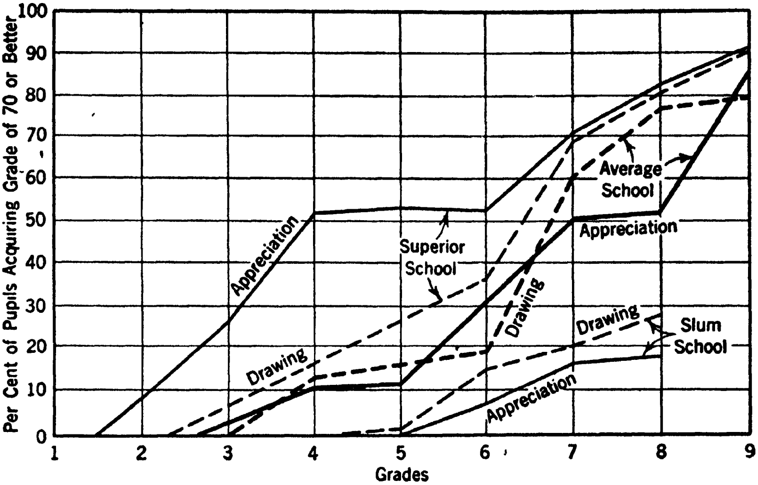

CHART 54.—Percentage of pupils in each grade making a score of 70 or better in tests of drawing and appreciation of art, the schools serving districts of three types. (From Whitford [22].)

fluences, had marked effects, especially in the first four grades; after that there is a level or plateau for two grades, then another rise. In this school the curve for improvement in drawing is very different in shape, rising most rapidly from Grade 6 on. In the lower grades of all three schools ability in drawing grew slowly, in part because the neuromuscular systems of these little children had not developed enough to make much skill possible. Art appreciation in the slum school grew even more slowly than skill in drawing and the rise in this school is very slight in both phases of artistic ability. The curves for the average school are yet different in shape and in relation to each other. Evidently it is possible after a fashion to measure and plot the growth of such traits as artistic ability. And apparently such ability may be affected by physical growth, home and neighborhood environment, and teaching. The shape as well as the rate of climb and relation of curves to each other may vary markedly from school to school. Clearly curves of learning may be the product of many complex and variously acting factors, and in consequence they may have many shapes.

Curves Showing the Progress of Individual Pupils.—Results such as have just been mentioned emphasize the need for studying the progress of individuals if a true picture of learning, as distinct from such factors as selection, is to be obtained. Chart 55 is from the pre-school period but is of great interest because of its different curves and also because it includes a very important but too rarely studied topic—the acquisition of an elementary habit of physiological control. The curve shows the acquisition of bladder control and of vocabulary by a child from 10 through 40 weeks of age. Growth in body weight is inserted for comparison. The child, who had an I.Q. of 135, was normal and very active. Toilet training was begun during the eighth month by placing the child on a toilet every hour. If micturition took place within 20 minutes, it was scored as a success. Learning such control was slow; it took some 20 months. Presumably this slowness was not due simply to slowness in understanding what the parents wanted, but rather to a great variety of factors—physical condition at a given time, emotional excitement or calm, distractions, interrelations with other learnings. The extended plateau encountered between the 18th and 27th months is possibly significant in this connection. The steady increase in body

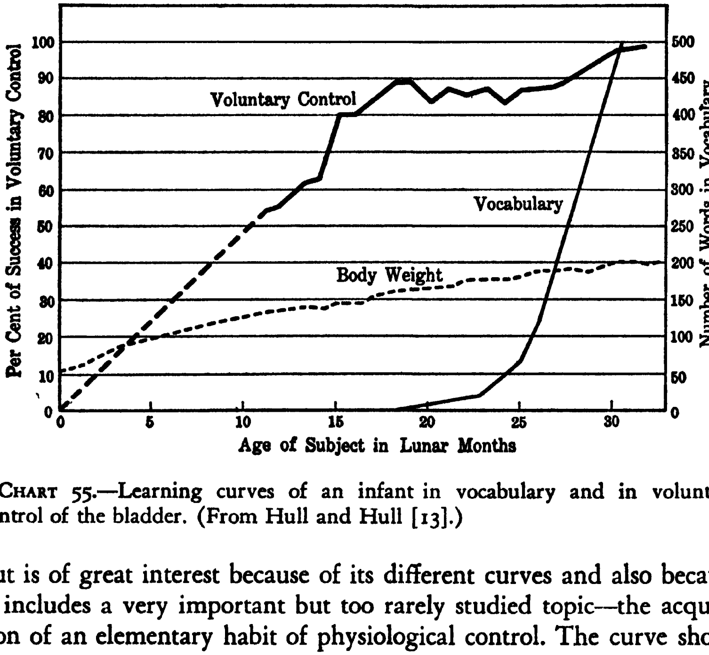

CHART 55.—Learning curves of an infant in vocabulary and in voluntary control of the bladder. (From Hull and Hull [13].)

weight suggests good health over this period; the plateau was not due to illness. It is known that beginning to walk often interferes temporarily with growth in talking; the authors suggest that beginning to talk may have interfered here with learning bladder control, since the beginning of talking coincides with the start of the plateau.

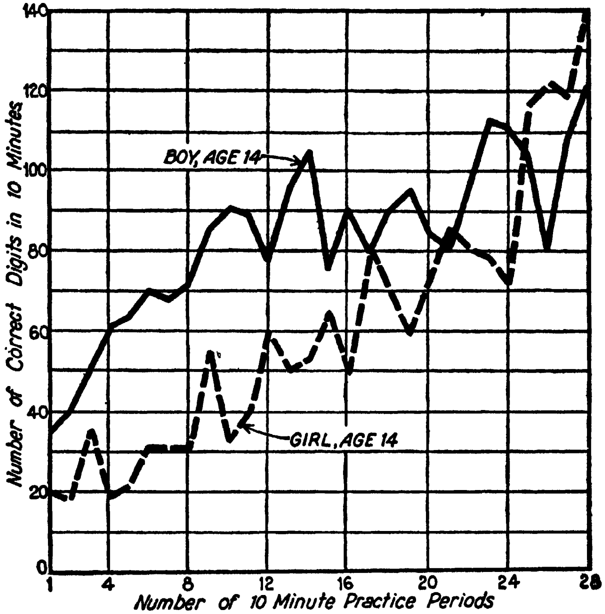

CHART 56.—Improvement made by two individual children in mental multiplication of two-place by two-place numbers, recorded by 10-minute practice periods. (Brooks [4].)

The curve of growth in vocabulary, based on word counts made each month, is itself very interesting. It rises with extreme slowness for the first five months of the record (from 18 to 23 months of age), but then comes a very rapid rise that continues through the early years. This slow start suggests that the child was not yet "ready" or mature enough to be able to learn to talk at the time the observations began. Presumably the learning of school material may sometimes show a similar deliberate start because it is presented before the child is "ready." This slow beginning occurs whenever the learner finds the task too difficult, either because he does not have certain necessary skills or knowledge that he can transfer to the new situation or because he is too young. A slow start may be due to this lack of "readiness."

Chart 56 shows progress in multiplication for two children. It anticipates the last section of this chapter in showing the marked improvement which children can make in a short time under experimental conditions, as compared with the relatively slow progress in the usual school situation. However, the graph has been included here to exhibit the marked differences in the total shape of the learning curve which may be shown even by two children of the same age and about the same initial ability. One child progresses rapidly at first, then slows down; the curve for the other child is the reverse of this —concave, with rapid progress at the end of the experiment. The marked short-time fluctuations are also evident.

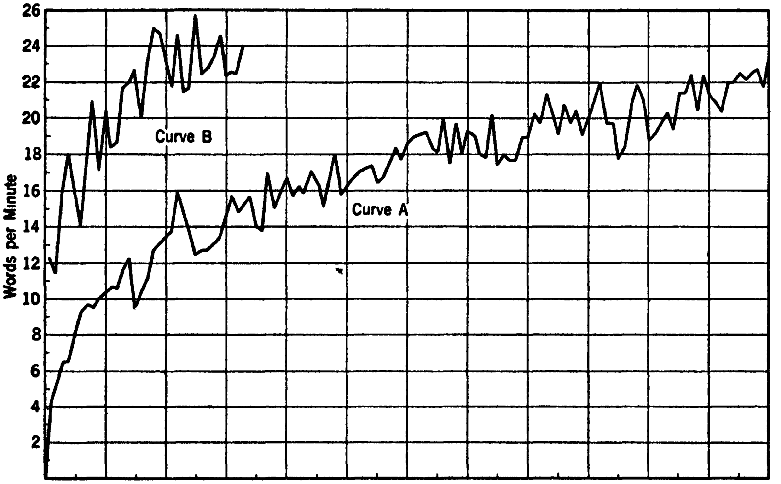

CHART 57.—Curves showing improvement in original and relearning experiments in learning to type. Curve A, original learning; Curve B, relearning 25 years later. (From Hill [11].)

Chart 57 shows both the progress of an individual in learning to type and the retention of this skill twenty-five years later. The subject learned to typewrite in 1907 by copying each day the same 100-word paragraph and a new page (300 words) of material. His initial learning curve shows a rapid beginning, an extended plateau, and marked daily fluctuations. After 125 days of practice he was typing 22.5 words per minute (counting two words off for each error). During the next 25 years his only practice consisted of typing a few letters between 1908 and 1912, and a manuscript of 75 pages in 1916. During the remaining time he had a stenographer. In December and January of 1932–1933 he undertook the relearning of this skill under the same learning conditions. On the first day he showed a skill equal to that originally gained only after 25 days of practice, and he attained his former highest level of performance in less than a fifth of the time of the original learning. This more rapid relearning is heartening evidence of the persistence of training in spite of disuse. A later chapter, however, will indicate that much learning falls into such decay that it is of little immediate use when needed.

It is evident in these studies of individual learning—with their rapid or slow starts, plateaus, sudden increases, and daily fluctuations—that many factors affect the progress of learning. For the most effective control of the learning process these factors must be understood. But before discussing them it will be well to consider progress in learning small items or elements of a subject. For somewhat as a growth curve for a group masks the progress of individual members, so may subject tests mask significant details as to the individual's progress in learning such elements.

The Learning of Specific Items.—Progress in learning a single concept or idea is well shown by data on the acquisition, by school children, of the technical vocabularies in various school subjects. Chart 58 shows knowledge of certain words much used in mathematics and history in Grades 4 through 12. Each curve shows the percentage of children in each grade who are able to recognize the meaning of the word there indicated. In considering these curves the reader should remember that the period of time covered is nine long years; he should not be deceived, by the condensation of the curves, into thinking that gains were rapid. Obviously, learning may proceed at various rates, depending upon many circumstances.

The word "altitude" shows a steady gain throughout the school years. "Premier" shows a long period of no progress—this plateau extends over five years. A surprising form of curve is revealed by the word "minus"; here is evidently only the top part of a curve, the lower end extending down into the grades below the fourth. From a given investigation one may obtain only a piece of a curve. Probably the total shape of this curve is similar to that given for "strike." There is the curve for "mixed number" —a curve that should be a lesson to anyone. Here is a concept that is drummed into the children's heads until most of them know it, but which is so lacking in usefulness that the labors of the hard-working teachers have gone for naught, even before the duller pupils have left school.

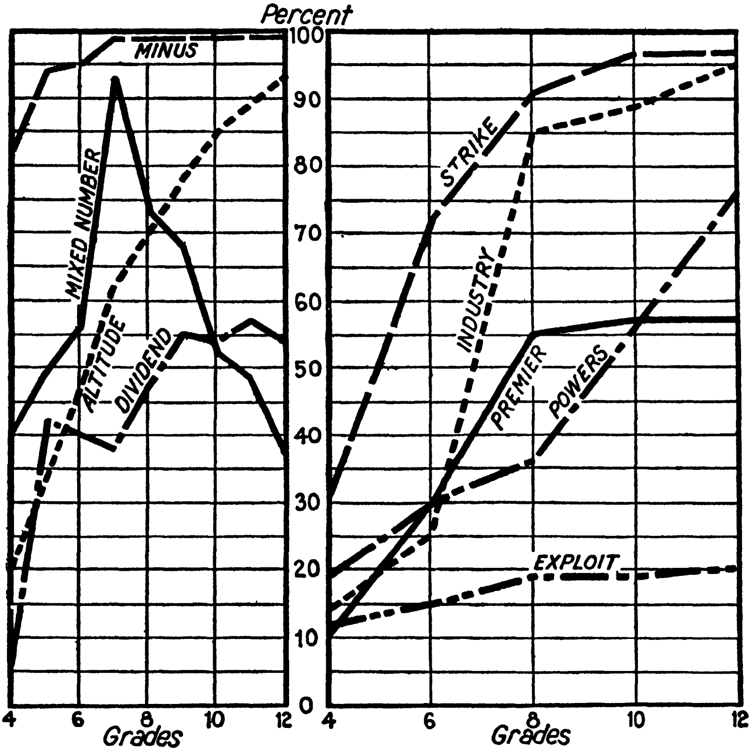

CHART 58.—The percentages of pupils in Grades 4 through 12 recognizing the meaning of four concepts in mathematics (first chart) and five concepts in social science (second chart). (Pressey [19].)

In history the word "powers" makes slow progress at first, probably because it is too difficult for children in the early grades. The next word, "strike," shows an early and rapid progress; knowledge of this word is reinforced by reading and talking outside of school. Still another shape of curve is revealed by the learning of the word "industry," which shows a slight rise in the early grades, then a marked progress in the year in which it was probably specifically taught, followed by a slow gain in subsequent years. "Dividend" shows a rise in the grade in which it is taught and some improvement thereafter; it is not, however, a word used outside of class, and its gain is slow. There were some words that showed practically no learning, as exemplified by the results for "exploit." In all probability these words occurred so rarely that they were never really understood.

The reader will find it profitable to review his own school experiences in the light of the curves presented in this section. He will perhaps remember some course in which he had great trouble getting started, another which "started off with a bang." All too often, after such a good start, there doubtless was a time when little progress seemed to be made. Most students in foreign language courses seem to end at a pseudo-limit when they can translate but cannot really read French or German or Latin. If a student has the patience, he will find it worth while to keep a daily record of his progress in some subject for a month (such as the time required to translate fifteen lines) and to make an actual curve showing his educational ups and downs in his work in this subject.

IMPORTANT FEATURES OF CURVES OF LEARNING

Learning curves thus show a great variety of shapes—no generalized type of curve seems possible. The shape of the curve for any given task and for any given child will differ according to a variety of factors. A teacher should be informed about the more important of these factors so that she may be able to follow a pupil's progress and interpret any evidences of difficulty. Such records of progress can also be kept by the pupils themselves so that they may see what they are accomplishing; they can also learn something as to how to interpret the major features of these curves. It is therefore desirable next to consider systematically the important characteristics of learning curves as exemplified above, and probable explanations of them.

From a survey of all the curves presented above, the following features might be selected as characterizing one or more of them: (1) Progress sometimes takes place with great rapidity from the start, and sometimes only slowly. (2) Periods of no progress, sometimes lasting for years, may appear in a learning curve at any point throughout its length. (3) Sudden spurts of rapid learning may appear. (4) Almost inevitably progress in learning is irregular, the detailed curves being characterized by many short-time fluctuations. Finally, (5) in some fields, limits of improvement are enforced upon the learner by his own nature or by the nature of the task.

The Initial Phase of Learning Curves.—Some curves start off with a brisk rise. This rise is sometimes due merely to enthusiasm and interest in something new, with resulting extra motivation and effort. More frequently it is due to a transfer of skills or ideas previously acquired. The boy who has played football, basketball, and baseball makes more rapid progress in learning tennis than the boy for whom tennis is the first game. The former has learned to hit a ball, to aim it at a particular spot, and to put his weight behind his stroke—and his muscles are strong. He has therefore already acquired many of the elementary skills that the untrained boy must learn before his progress in tennis is marked. Similar situations arise in schoolwork. The child who has done well in grade school arithmetic makes a rapid start in algebra because he can transfer many well-developed skills to this new subject; the pupil who has had much trouble with his arithmetic has little to transfer. We may, then, expect rapid progress from pupils who are well prepared to begin work on a subject, especially if the teacher assists by pointing out the transferable skills instead of leaving the youngster to discover them for himself.

A slow initial rise can of course be explained partly by the converse of the above. The pupil is for some reason poorly prepared for the learning in question, or he may find himself without any method of attack on his problem and unable to get going. For example, he may not know what a division sign means in a problem like 176 ÷ 23 and consequently be unable to make a beginning. If such difficulties occur often, he may become completely frustrated and remain bogged down at the start.

One further explanation needs to be kept in mind in dealing with children: they may be simply too young for the learning required of them. The writers have seen more than one child in the first grade struggling with handwriting but making little progress; two years later, when his muscular and nervous systems are better developed, this same child would have shown a learning curve with a rapid initial rise. The curve shown above for the baby who at first could not talk at all, then at 25 months began to increase in vocabulary very rapidly, is a case in point. Many children who develop slowly are expected to learn to read and to figure before they are mature enough to be "ready" for reading or arithmetic. They then begin their schooling with an experience of failure which establishes an attitude of inadequacy or dislike as regards schoolwork that remains from then on. If lessons in reading and arithmetic had been postponed a year or two the children might have matured enough to be "ready" for their subjects. Whenever a child cannot get started in a subject the possibility should be considered that his abilities and interests have not yet matured to the point where he is ready for the work he is being asked to do.

Plateaus.—The periods of no progress are the crisis points in learning. When students drop any undertaking it is often because they are on a plateau; they do not have the patience to learn the keyboard for touch typewriting, fail to habituate themselves to phrase-writing in shorthand, or do not get the idea of exponents in algebra, and finally give up in disgust. Causes of plateaus thus need to be particularly considered, and when a pupil seems to be on a plateau—when he seems to have come to a standstill—the teacher obviously should analyze the situation and try to get things going again.

Plateaus may appear for any of a number of reasons. They may be caused at any point by sheer discouragement or lack of interest. If this is the case, better coordination with the pupil's interests or an added incentive should end the matter. However, lack of interest is usually secondary to some other factor; a student may be at a standstill in algebra because he does not know how to handle exponents, feels that he is making no progress, and becomes discouraged or disinterested in consequence. Merely to give a "pep talk" will do the unhappy youngster little good; what he needs is to have exponents made clear to him. Therefore, a teacher should usually regard loss of interest as a symptom rather than a cause, and should seek the fundamental cause in some of the further possible factors now to be considered.

An obvious possible cause for a plateau is increased difficulty of subject matter. A student may start off rapidly in his acquisition of French but presently find himself in trouble because assignments have been increased too rapidly, or because a new book has been begun which has a somewhat different vocabulary and sentence structure from the material he has previously been reading. Many plateaus could be avoided if subject matter could be given in more even doses.

Plateaus may be caused by some bad habit which interferes with progress. A child may have developed in the early grades a habit of counting on his fingers instead of adding; this technique carries him along through simple computation but will cause a plateau when something more complicated is called for. An incorrect way of holding a pencil may result in a plateau after the child has learned to write as well as he can with the grip he is using. Or, because he has been trained to read out loud, he may develop a habit of looking at each word as he reads. As indicated in Chart 52, there are more fixations per line in oral than in silent reading; consequently, a pupil who has an "oral-reading habit" soon reaches the highest possible speed and must alter his method if he is to progress.

Again—a cause somewhat the reverse of the above—a pupil may stop progressing because of his failure to understand some necessary new method or basic principle or idea. Algebra students often have trouble with negative values until—perhaps by analogy with a thermometer—they "get" the idea. To get the idea of rhythm in typewriting, and then to habituate oneself to a rhythmic operation of the machine, may markedly facilitate progress in learning to typewrite.

Still other plateaus are due to difficulties in getting habits organized in larger units. When a person learns to typewrite, for instance, there may be considerable periods of little apparent progress between the time that he can strike the correct key in response to each letter and the time that he can run off whole words automatically without consciously spelling them out. There seems to be going forward a process of consolidation of letters into word habits; meanwhile, there is little obvious improvement. Plateaus of this sort may occasionally be necessary, but they can usually be avoided by the simple expedient of beginning with the more complex habits in the first place.

Thus in the old days children began reading by learning the alphabet, painfully spelled out words for a while (they were then on a plateau), and only gradually learned to recognize words as wholes. Now they begin reading with words and even simple sentences, and the plateau is avoided; a word is recognized by its complete outline somewhat as a Chinese "word-picture" is recognized as a unit. In typewriting the learner should practice simple words from the start. In beginning a foreign language a student should not first laboriously work out the meaning of a sentence by analyzing the grammatical structure, and later learn to read directly for meaning as he does in reading English; he should "read" the foreign language from the beginning, and fall back on grammatical analysis only as a last resort.

Plateaus due to difficulty in consolidating "higher order" habits should therefore (like all other plateaus) be considered preventable; the pupil should have been taught to begin with more complex units. When such plateaus are found, they may be regarded as evidence that the pupil did not thus begin. Or—a very common fault—just as the pupil is getting under way with the more complex units, too many of them are put before him; he is given too many different words to practice on the typewriter, or too difficult matter in French or German. Here the difficulty is of the second type mentioned above ("dosage"); the lessons are not well graded. More practice on fewer words in typewriting or more reading of easy French or German will take care of the trouble.

A teacher should, then, keep closely enough in touch with the progress of her pupils so that she will know when a plateau occurs. She should recognize a plateau as a time when her help is needed; and she should know enough about the possible causes to be able to diagnose the trouble and give the right kind of help.

Is little Margaret in the third grade on a plateau in her ability to add columns of figures because she has lost her interest, because she has developed a bad habit (such as skipping around in a column looking for combinations that will make 10), because the dosage of subject matter is too large for her ability, because she has missed some fundamental idea (such as how to carry), or because she is still so busy with the necessary simple additions that she cannot handle the more complex situation of several consecutive additions? The teacher can leave it to time to remedy Margaret's troubles, or she can study both Margaret and the subject matter until she has found the source of the particular plateau and then proceed with such remedial measures as are indicated. Not only can a teacher find the cause of plateaus, but she can do much to prevent them. If she develops a situation in which the children are interested, if she starts children with good habits, if she suits the amount of new material to the children's abilities, if she makes sure that fundamental and (to her) obvious points are not overlooked, and if she gives children understanding and encouragement, she can do much to prevent these discouraging periods.

Sudden Increases.—This situation appears so often in everyday life as to be sometimes overlooked. For instance, a man practices a golf swing, with what patience he may, for months; then suddenly the swing "clicks." He has found the exact combination of grip, stance, back swing, and timing needed. The same thing happens in mental work. A pupil may struggle an hour with a problem such as "The length of a field is twice its width. The perimeter is 42 rods. What are the dimensions?" Then, of a sudden, the correct equation comes to him; he "sees through" the problem. A second-grade child may plod wearily along, reading the pages of a book word for word; suddenly he becomes engrossed in the story, his speed increases, and he is really "reading." These spurts of improvement frequently come at the end of a plateau during which elementary habits have been gradually acquired—and sometimes after the learner has completely given up hope.

Short-Time Fluctuations.—This characteristic of learning is universal. The organism, the dose of material to be learned, and the total situation change from day to day. If the learner is sick, distracted, bored, or in any way different from his usual self, his learning efficiency will vary. He would have to live in an environmental vacuum if he were not to vary in his attitudes, moods, and health, and in the total of distractions or facilitations which influence him. Furthermore, on different days the work is not likely to be equally hard to learn.

Even if the learner is working at the same general task, such as learning to typewrite, he is faced by different minor problems every day; on Monday he hits "q" for "a" and "r" for "t" continually; on Tuesday he hits the letters accurately but his spacing is wrong; on Wednesday all goes serenely; on Thursday he thinks he can go faster, with the result that his errors mount with every moment of practice; on Friday he is too discouraged to try much, although he makes fewer errors than on the day before; then on Saturday the emotional flurry is over and his only trouble seems to be that he hits "m" for "n" and cannot remember where the "q" is.

Short-time fluctuations should always be expected. The reasons for many of them are so obvious and so simple that explaining them to children is feasible and would save many a period of discouragement. For children are likely to suppose that these ups and downs are due to their own stupidity, not realizing that they are the natural concomitants of all learning and consequently, nothing to worry about.

Limits of Improvement.—Here is indeed an important topic. To try to educate a person beyond his ability is worse than useless; it is frustrating and destructive of morale. But to fail to realize a child's potentialities may also be exceedingly unfortunate. However, there is little use in carrying a pupil beyond his needs, even if he can thus progress. It is a waste of time to drill children in handwriting beyond a reasonable speed and legibility until they reach copperplate perfection; they had better spend such further time learning to typewrite. The question of desirable limits is evidently complex. In most school subjects most individuals of average ability never reach their limits. They could do better. But they lack motivation and adequate instruction and never exceed what is for them mediocrity. The better modern schools have demonstrated that these usual "limits" can be greatly exceeded, as will shortly be pointed out.

Three types of limit *are* of importance educationally, however. In the first place, as has been mentioned previously, a child may be too young adequately to understand some material which the school puts before him, although a couple of years later he can grasp it without trouble. Thus, certain topics in arithmetic may be put too low in the grades; similarly, research has indicated that some grade school history is too difficult for the children in these grades.

In the second place, dull pupils may find much of the regular schoolwork too hard for them. Some youngsters enter high school who are not intelligent enough to succeed in the usual secondary school program. Some enter college who cannot do college work. The sooner it is realized that such individuals have attempted work beyond their limitations and they are *tactfully* redirected, the better for them and the school.

In the third place, wherever a physical skill is involved in the performance of a learned act, a "physiological" limit is imposed by the body mechanism involved. Typewriter keys cannot be struck any faster than fingers can move, or a race run any faster than legs can carry the runner. The world's records for men in various track events are close to being physiological limits. It is presumably only a matter of time until a man with the maximum equipment in the way of leg development, lung power, heart action, muscle coordination, nervous control, and competitive disposition will be trained by the best possible methods and will run 100 yards in the shortest time humanly possible. The most rapid readers in the world may have reached a physiological limit; their eyes can cover a line no faster—at least under present reading methods. Even in such skills, however, the average person remains far below his limits. We could write or read more rapidly than we do, but our present skill satisfies us, and it may be good enough for ordinary emergencies. A few weeks of intensive practice would teach us to run much faster, but we so rarely need to run that we do not trouble to improve. The limit is there, but the likelihood of our reaching it is about as small as of our exceeding it. In most cases one must, for practical reasons, stop work in one line to have time for effort along another. Thus we learn to write well enough for the practical needs of life, and then we turn our energies to something else rather than go on to acquire further skill in writing. The teacher should always keep the total economy of life in mind when she considers objectives and limits.

In teaching not only handwriting but also arithmetic and science and literature and art, a bright child should not be carried beyond his need, at sacrifice of other values. Betty may have talent in art. But if she is no artist and will probably marry, she should not spend so much time in the art class that she becomes a disappointed near-artist but never learns enough about child development, home management, or modern economic and social problems to make a good mother and wife and citizen. It is sometimes said that children should be educated to the limits of their abilities. That is not true. They should be educated up to their needs, due account being taken of their abilities. To determine the general level of everyday needs in such areas as writing, mathematics, reading, and artistic skill, more research must be carried on.

THE LEARNING CURVES OF THE FUTURE

The curves presented in the first section of this chapter give evidence as to how learning is at present going forward in the schools. The question now is as to whether it may not be possible to cause learning to progress more rapidly—make the curves rise more sharply, with fewer discouraging plateaus and with higher levels of ultimate performance.

Suggestions from the Study of Present Learning Curves.—It should first be noted that the learning curves in this chapter suggest many possibilities for the greater facilitation of learning. For example, the curve showing the growth in the small child's vocabulary indicated almost no learning for the first few months of the investigation, and it was pointed out that schools often seemed to make the mistake of presenting subject matter to certain children before they were intellectually mature enough to learn it. If subject matter were better graded so that children were not asked to undertake a particular kind of work before they were capable of doing so, much waste effort on the part of both teacher and child would presumably be avoided. The curves of progress of the two boys in arithmetic were so different as to indicate clearly the need for recognition of individual differences in learning, and the graph of progress in Spanish vocabulary, with its indications of the extraordinary range of knowledge in every class, showed how insistent these problems of individual differences are. The great daily variations in the curve for learning typewriting should suggest the better grading of subject matter from lesson to lesson. The increase in punctuation errors in the last years of high school and in college raises the disagreeable question as to whether circumstances may occasionally arise in school which actually put education into reverse, so to speak—which not merely interfere with educational progress but actually destroy previous educational gain. Undoubtedly there is evidence, in the curves describing learning as it now progresses in the schools, to suggest that it might go forward much more effectively.

Evidence from General Observations.—General observation of the work of the school gives multiple support to such a conclusion. The figures showing school failure are striking in this connection. Many children fail to pass the first grade of the average school, and a large group in high school usually fail first-year algebra. Of a thousand pupils who reach the fifth grade, it is estimated that about 200 never get through the eighth grade and over 600 never graduate from high school. Only about 40 per cent of those who enter college ever obtain a degree (2). Some of this educational mortality is, of course, due to poor intelligence; furthermore, various extra-educational factors such as lack of money cause some high school and college students to drop out before completing the course. Nevertheless, a large proportion of this mortality must be attributed to educational inefficiency.

Striking also is the contrast between the usual learning in school and the progress which a youngster may make on a hobby in which he is very much interested. A boy may take a year dawdling through a course in general science but in a short time master intricacies of radio sets or airplanes which are far more difficult than any material the science course puts before him. For a debate he will read in two weeks twice as much on a current governmental problem as he covers in a year of American history. A girl may spend a month on *Ivanhoe* in school, and in the meantime gallop through three other Waverley novels with much more enjoyment and understanding.

The boredom and dissatisfaction common among high school and college students are also significant. Such attitudes are partly due to the out-of-date and irrelevant curricula of the average high school and college which require alert and modern-minded young people to take Latin or ancient history or Shakespeare when they should be studying economics or current events or modern American literature. But the dissatisfaction is also due in no small measure to perfunctory teaching, to textbooks which hinder rather than further learning, and to the feeling that much of the time spent in school is little more than educational busy-work. Not to be dismissed lightly are the chronic student complaints in both high school and college, and the student "protest literature" (the critical, abusive, or satirical material chronic in student papers and magazines).

Finally, the astounding ignorance of graduates of our high schools and colleges constitutes a sweeping indictment of the ineffectiveness of much of modern education. An astounding proportion of such "educated" individuals cannot read with effective understanding, have no appreciation of modern literature, and approach modern economic and social problems with gross prejudice instead of informed comprehension. Surely effective teaching would not permit such conditions.

The Evidence of Experimentation Regarding Possible Improvement in Learning.—The above statements have been general. The crucial question is this: What experimental evidence is there that, when the available knowledge regarding the learning process is applied, learning will go forward more effectively than under the usual school procedure? Charts 59 and 60 are of first interest in this connection.[4] The first shows progress in handwriting (1) under a conventional method of instruction, and (2) under an individualized, self-instructional procedure permitting each student to progress at his own rate, to measure his progress, and to obtain aid in the diagnosis of his difficulties. The superiority of the more modern method is obvious.

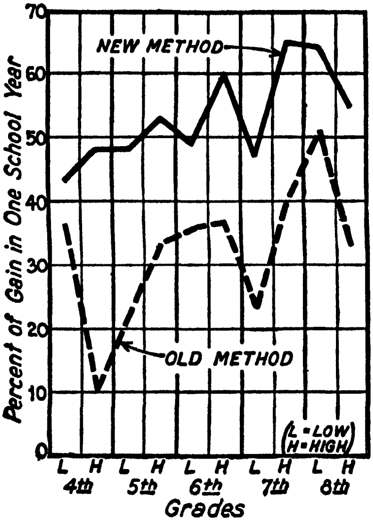

CHART 59.—Showing the gains made by classes of children (a) under conventional types of teaching in handwriting, and (b) with the use of the Courtis practice exercises. (From S. A. Courtis and L. A. Shaw, *Courtis Standard Practice Tests in Handwriting, Teacher's Manual,* World Book Company, Yonkers, 1921.)

Even more striking is the second graph, which shows the increase in speed of reading in terms of the number of words read per minute over a total of 28 days. The method used was simple. There was great emphasis on rapid reading, and records were kept and curves made so that students could see their gain and be stimulated thereby. There was also stress on the elimination of "whispering to oneself" so that lip and tongue movement and inner pronunciation would not slow down true silent reading. The graph shows sample results from a total of 19 pupils in Grade 6. Evidently the limits reached by the average pupil in the average school as regards speed of reading are pseudo-limits, and with proper training they can be easily exceeded. Probably the remarkable gains here shown are to be understood not as improvements in the same reading skills but rather as the result of

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[4] They report research now old, but in certain respects all the more interesting on that account. They show what vigorous work was being done, twenty years ago, in the "tool" subjects—work now "out of fashion" but still significant. And they show the lag of the average school behind demonstrated good procedure. Twenty years ago the effectiveness of individualization, knowledge of goal and progress, and diagnosis of difficulties was thus evidenced. But most schools still largely fail to put these findings into effect in their own teaching.

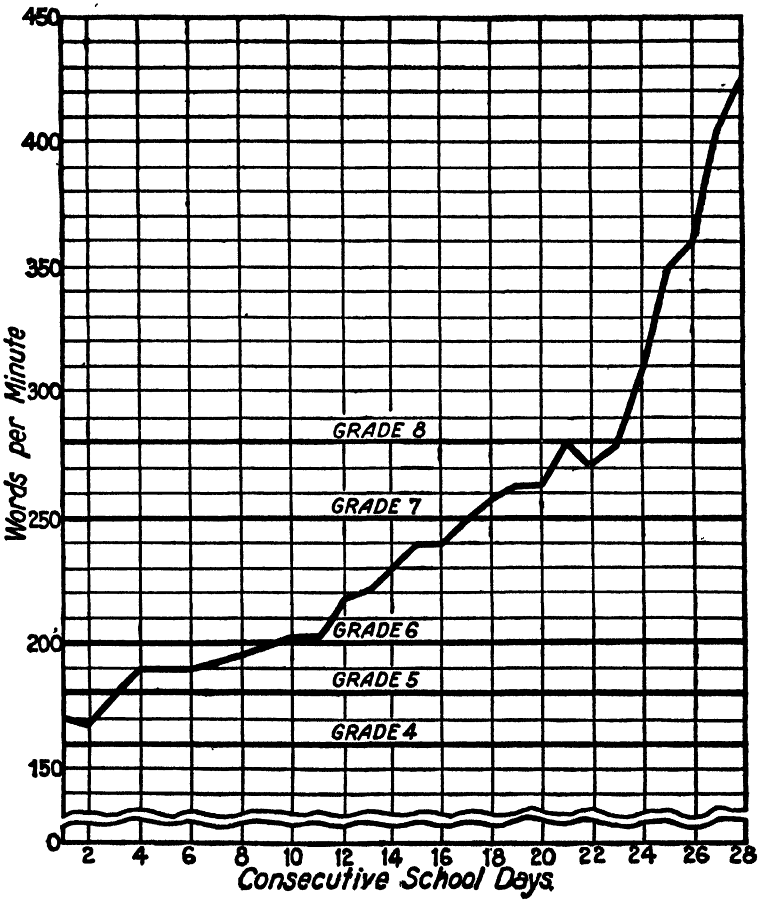

CHART 60.—Improvement in silent reading during 28 days of training. Cross lines show norms for Grades 4–8. (From J. A. O'Brien, *Silent Reading*, Macmillan, 1921.)

pupils shifting from word reading to skimming. Such a shift is for most purposes desirable.

These two curves show progress in skills, and thus involve physiological limits—as of coordination of hand movements in writing, and quickness of eye movement in reading—which might beyond a certain area retard gain.[5] It seems reasonable to assume that in subjects not involving such factors, as in history or science, modern methods might bring even more striking improvement. In fact, learning might go forward more and more rapidly as the student proceeded in the subject. As information was accumulated, each new fact would be apprehended more quickly, for he would have more facts already in hand with which to relate it; knowledge might "roll up like a snowball." As each new principle came to be understood, new knowledge could be more quickly organized. And in a modern school, where the different subjects are also interrelated and the program is articulated with the child's extra-school life and the activities of the community in which he lives, marvelous progress might be possible, making the droning incompetence of the old-fashioned school seem medieval by comparison.

As has been said, the two studies just mentioned deal with skills, and they are old. The investigation next to be described is much more recent (24, 25). It covered secondary as well as elementary school. And in contrast to emphasizing skills it stressed improvement in such respects as knowledge of current affairs, aesthetic judgment, skill in applying facts, cooperativeness, emotional stability, and honesty. Are marked improvements possible also in such traits and abilities? Chart 61 summarizes evidence that they are.

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[5] However, even in such skills there is always the possibility of improved techniques. Two studies of illegibilities in handwriting made under the supervision of one of the writers suggested not only improved methods of instruction but also slight changes in the formation of certain numerals and letters which might both improve legibility and make writing easier. The above findings in reading suggest the possibility of better methods of reading than those now commonly in use. After all, in reading, why should it be necessary to "pace off" each line with the eyes? It is not necessary thus systematically to look over a picture in order to apprehend it; a few quick glances suffice. Why cannot the sense of a paragraph of printed matter be similarly apprehended? Very rapid readers apparently do "skim" in somewhat this fashion. Why should not gradual improvements in such techniques be expected? Such gains are evident in sports. Modern tennis is a very different game from the tennis of forty years ago; new methods of serving, of stroking the ball, and of handling returns have been discovered. Why not improved techniques in reading? Why not improved methods of work? Why not even improved techniques in thinking?

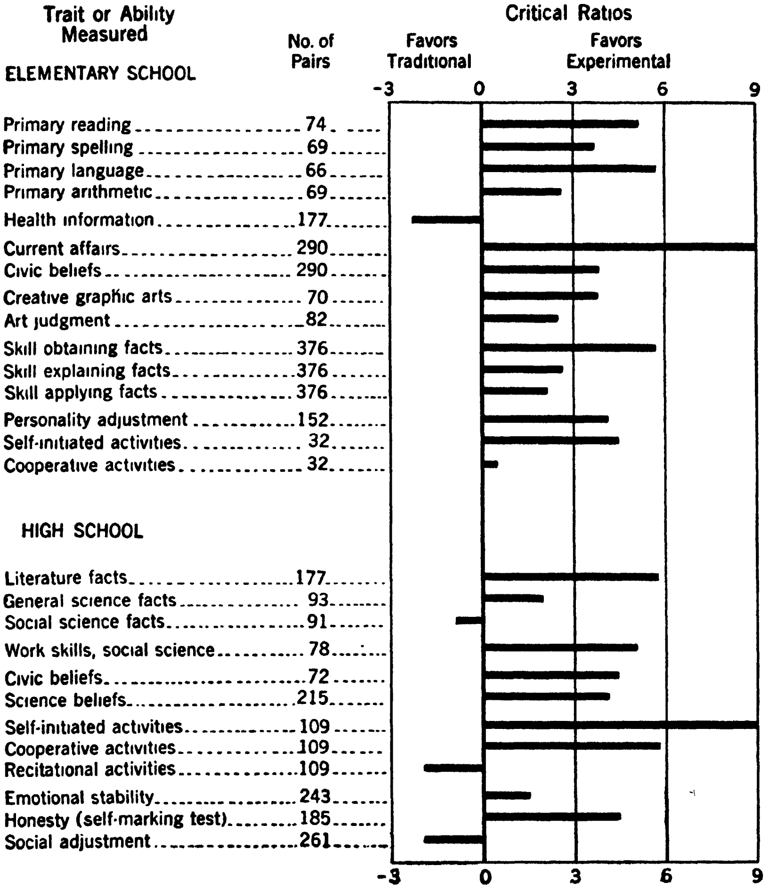

CHART 61.—Comparative progress in tool subjects, information, beliefs, and adjustment of pupils in schools with integrated activity-project programs and in schools with traditional programs. Bars extending to right of vertical line show greater gains for the activity program. Differences in social adjustment in high school were not sufficient to be reliable. (Based on critical ratios reported by Wrightstone [24], [25].)

Data were obtained from three pairs of communities, the pairs varying in general nature from suburban to industrial. The paired communities were similar in general economic status, population, expenditures for education, school attendance, preparation and pay of teachers, and average size of class. However, one community of each pair had a "traditional" school program, while the other had more "progressive" schools. The latter schools did not all have exactly the same type of program, but certain characteristics were common to all. All emphasized cooperative planning by students and teachers working together, choice of areas of subject matter and of problems which students felt were real and interesting to them, opportunities for the students to show initiative and enterprise, and disregard of any formal program or division of subject matter. In contrast, the conventional schools had the usual separate school subjects which were assigned lesson by lesson and recited upon.

Evidence was sought not only regarding the pupils' accomplishment in subject matter but also regarding their ability to interpret and apply knowledge, and their social adjustment. A variety of tests were given; further, the children were systematically observed over considerable periods of time to see what their behavior was like, with special reference to such social traits as have just been mentioned. In handling the data, pupils were paired as regards intelligence quotient, chronological age, semester of study, and socio-economic status. A pupil in a progressive school was thus compared with a very similar pupil in a very similar community where the schools were conventional. Any differences in educational outcomes should thus assuredly be due to the differences in educational programs.

As the chart shows, practically all the differences—and every one of those which are sufficient in size to be considered significant—are in favor of the modern type of program based on a broad modern understanding of child nature and the learning process. Children who went to a school with an activity-project program learned more reading and spelling and arithmetic, knew much more about current affairs, were better adjusted and more enterprising. In high school such programs were especially effective in desirably influencing attitudes and beliefs, and in increasing initiative and cooperativeness, as compared with conventional programs. Marked improvement in the efficiency of the schools thus is possible, not only in the teaching of school subjects but also in the development of desirable artistic sensitivities, beliefs, and traits of personality.

A BROADER VIEW OF LEARNING

So far, learning has been treated almost as impersonally as if it were a chemical reaction. Certain unnamed and unknown children learned arithmetic or Spanish or history. And in most instances little or nothing was known regarding the situation in which the learning was done; the implication seemed sometimes to be that it was some abstract standardized classroom with some depersonalized standard teacher and depersonalized faceless other children as classmates—all as independent of the reaction being studied as a test tube. But really every learning is only a part (usually a very small part) of an exceedingly complex and highly individual youngster's life. Every class is a lively little society which influences everything that everyone does in that room. And the habits, opinions, conventions, and ideas of the neighborhood and community affect both child and school. It is vital that this larger perspective regarding learning be appreciated.

A "Field Study" of Learning.—In an effort to comprehend a very complex matter it is often helpful to begin not with a general statement but with an actual example that has all the concreteness and color of reality. What is first needed is some understanding of how learning goes on naturally; there should be a "field study" of learning, for in the average school the learning process is often so devitalized and special in character and without many of its natural features that there is difficulty in recognizing the total process for what it is. Learning will therefore be first considered by observing children not working but at play, not in school but at home, not taught but learning among themselves how to solve a problem.[6]

A father recently brought home to his 10-year-old daughter a picture puzzle. Two friends of the girl were with her when he came in and gave her the mysterious package. There was much curiosity as to what it might contain. The daughter was proud that her father had brought her a gift and that she had something to show her friends; the friends were eager to see what this new thing might be.

It was discovered that the box was labeled "The Puzzle Shop," and below there was the title of this particular puzzle, "A Scene in Venice." One little girl had never seen such a puzzle before. And when the box was opened, displaying the many queer-shaped little blocks with colored paper pasted on one side, she picked up two of the pieces, put one of them on the table face down, and regarded them with a bewildered expression, quite evidently not knowing what to do.

The daughter had dealt with puzzles before, however. She dumped out the blocks on the table, quickly turned them all face up, then scanned them over with an experienced eye. "Oh," she said suddenly, "I see part of a window to a house. Let's see if we can find the rest of the window." When several pieces centering around this window had been put together there was a pause. Finally one of the other girls spoke up. "I've seen pictures of Venice with gondolas," she said, "and this part looks like the top of one. And here is another part." As a result, another aggregate of pieces was put together. With joyous squeals one girl or another contributed a part. It was next discovered that one of the sections already assembled included part of the straight side of the picture; it was then possible to look for other blocks with one side straight.

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[6] The reader is urged to make field studies of his own, noting, for instance, how children work at hobbies. The efficiency of this learning as compared with work in school, and the perfunctory character of much of the schoolwork, will usually be strikingly evident.

Soon the picture was completed, and with a gusty sigh of satisfaction the three sat back. "Let's see how quickly we can put it together again," one of them remarked. The picture was forthwith pulled apart and reassembled. The reassembling was not done in quite the same way as before. It began in a different fashion. The girls worked more rapidly, and there was an air of assurance which was different from the procedure in the initial trial. "Now," one of the girls remarked, "I know what to look for."

This household episode is commonplace. But every bit of it has an important significance for teaching—a significance in many cases neglected; in consequence, certain features of this humble little story must be examined in more detail.

The Learners in Relation to the Learning Problem.—First the obvious fact must be pointed out that the children would not have attacked this problem vigorously and effectively if it had not been, in various respects, suitable to them. A trio of 4-year-olds would have found the puzzle neither interesting nor possible of solution. A sick child would not have had the vitality to see it through. A miserably unhappy youngster would have been too distracted to keep his attention upon it. If instead of the puzzle the father had brought home a toy pistol and target, these conventional little girls might have scorned the gift as inappropriate; but solving jigsaw puzzles was a proper thing for girls to do, and "A Scene in Venice" had a certain romantic appeal, even to these 10-year-olds.

The Learning Situation.—Furthermore, the total situation was favorable for this undertaking. The day was rainy and the girls could not play outdoors; if there had been a picnic or some other more active diversion, the puzzle might possibly have been put aside. The daughter had had experience with these puzzles before, and knew that one could find interesting pictures if one put them together. The activity was backed by a favorable total social situation. One little girl had not seen such a puzzle; in consequence the daughter had the pleasure of showing her playmate something new, *and* demonstrating her own skill in puzzle solving. With her other friend who had done puzzles there was the companionable pleasure of joint activity in the solution. It was a social situation having in it somewhat diverse and entirely agreeable elements.

The interest aroused by the gift continued and even grew as work upon the problem went forward. The children knew clearly that progress was being made. Every little while there was the thrill of a minor success. It must be emphasized that learning feeds upon success. If the problem had been so difficult that the girls made no headway, they probably would have soon dropped it.

The Search for Solutions.—It is next important to observe how progress was made. The methods of attack were very important. The sophisticated little owner of the gift began with the essential first step of turning all the blocks picture side up—something which the girl who had never before seen such a puzzle did not think to do. And once the blocks were thus turned, the first effort made by the girl who "knew how" was to find some identifiable piece around which other pieces related to it could be grouped. Another procedure was to locate an edge of the picture and build along that. Relevant information was important; one girl was able to help because she had seen pictures of Venice and knew what a gondola looked like.

Furthermore, there was cooperation in the work. One little girl found a window, another the gondola; from time to time each one of the three discovered a combination that the others had not seen. It must be emphasized that they did not progress by making mistakes. Progress was not a matter merely of avoiding errors, but a positive matter of discovering successful combinations. Neither was it aided by emphasizing failure or by criticizing. In fact, quite the opposite happened at one point in the proceedings, for the little girl who was a stranger to puzzles made several very foolish suggestions. "Why don't you think before you move?" the other visitor said sharply. The reproved child subsided noticeably, making only halfhearted and purely tentative efforts thereafter. Moreover, progress was made, fundamentally, by trying things. Occasionally the little workers stepped back for a moment and regarded their efforts in silence, but for the most part they proceeded busily with the actual moving around of the pieces —just thinking was not adequate.

The Recognition of Right Responses, and the Causes of Improvement.—How did the girls know when they had found the right answer to the question of where a block belonged? The answer is obvious: the block fitted. And the reasons why the puzzle was solved more quickly the second time? Well, for one thing, the girls consolidated the old and found new methods of attack; for instance, they made more use of the procedure of finding an edge to the picture and building along it, and they looked over the blocks systematically for one which would fit a peculiarly shaped place. They were encouraged by knowing that they could get the solution. Most important of all, perhaps, they had a better conception of the picture as a whole and knew for what they were working. However, the second solution by no means proceeded exactly like the first. There was no mechanical running through the same moves a second time; the second was rather a new solution based on wisdom gained from the first.

So much for the happenings in a certain household on a rainy Saturday afternoon. Clearly an adequately broad view cannot consider learning simply as an impersonal general process. A good teacher goes much further. She has a shrewd understanding of both the learner and the learning situation and of the possible dynamic interrelations. It is especially those shrewd understandings which make her a good teacher. To these very important and practical topics the next two chapters are devoted.

SUMMARY

To understand learning it is first desirable to describe as specifically and clearly as possible how learning proceeds. From graphs and similar evidences picturing the general trends that appear in the learning process some inferences can be drawn regarding the nature of that process, and important factors affecting it. However, such descriptions of specific learnings have usually resulted in too narrow a concept. It is vital always to see a particular learning in its larger setting: in relation to the learner, and in relation to the situation in which it is intended that the learning should take place. The purpose of this chapter has been to give this description and to illustrate such a perspective.

1. A natural and businesslike first step in considering learning in school is to determine the progress which is made from grade to grade in various school subjects. Such curves may be of great value in planning school programs. Thus progress in certain school subjects, such as mastery of the mechanics of English composition, appears to go forward very rapidly in some grades but to become negligible or even retrogressive in others. Progress is sometimes disturbingly slow as in foreign language, but better classification of pupils holds out promise

of much greater efficiency. Even in artistic appreciation it is possible to graph progress and to show that such diverse factors as emphasis in instruction, physiological maturity, and home conditions all affect the graph. When the curves for individual learners are studied, the interrelation of different learnings may be seen, and the wide differences among individuals. Curves showing progress in small elements of information or understanding emphasized the specific and also the highly complex nature of learning. The quickness with which these elements are forgotten suggests that some learnings are useless; others appear to be begun too early or too late.

2. Analysis of curves gives them yet richer meaning. The beginning may be so slow as to suggest that the material was taught before the pupil was ready or prepared for it. There may be long discouraging periods of no progress which should be a signal to the teacher that her help is urgently needed. There may be sudden increases; how to bring these about is a matter of special interest to her. And there may be limits. If they are real, to keep trying to exceed them is worse than useless; it is demoralizing for both pupil and teacher. If they are pseudo-limits and further progress is desirable, to break through them is indeed a thrill for pupil and teacher both. Thus to graph and analyze the record should be as much a helpful method in her work as a study of graphs of production is important for a manufacturer in making his plans.

3. Quite as much as industry does, education *should* seek to improve its efficiency. Study of learning curves suggests many ways in which greater efficiency might be attained. Research demonstrates that great improvements are possible.

4. Learning is not an impersonal process, going on in the isolation of a test tube, and the study of learning curves must not be permitted to suggest any such conclusion. A particular learning is simply an episode in the learner's total life and occurs as only part of a total exceedingly complex situation—two facts which psychological investigations of learning have in the past too often been neglected. These larger factors affecting learning are discussed in the next two chapters.

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A fourth step might be a survey of the student's essential preparation for the work in hand, for a pupil can hardly attack a subject effectively if he is grossly unprepared for the work. Often there seems to be such lack. For instance, 56 per cent of one group of seventh-graders thought Benjamin Franklin was a clergyman since he was a minister to France (45); the average college freshman can define only about half of the twenty most frequently used units of measure (22).

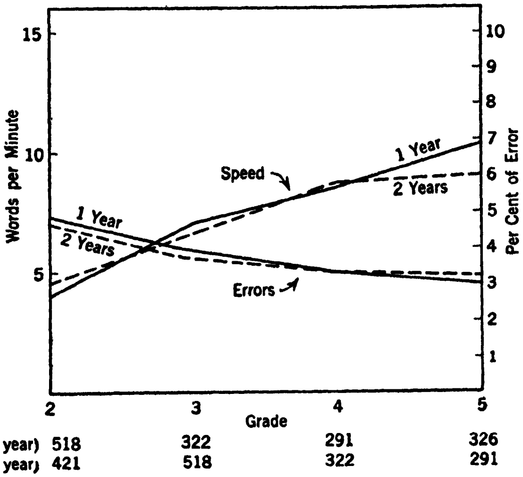

CHART 63.—Comparative speed and accuracy in typing of children at each grade level who have had one and two years' experience. (From Wood and Freeman [56].)

Some remedial attention to such lacks should help the first group in history and the second group if beginning a course in science. And the student should have such ways of construing the topics he is asked to consider that he will benefit from the instruction he receives. Thus, in one school, pupils in the fourth and fifth grades who were formally taught history had no better conception of time relationships and absurdities than did pupils who had received no formal work in history (39). Their failure to structure historical material may have been due to intellectual immaturity or poor teaching. But if in earlier grades they had had the best type of work in the social studies, with consideration of primitive peoples and national backgrounds, they might have had more "time sense."

Lack of familiarity with the style and mode of thinking in a passage often causes great difficulty in understanding. Thus, because of the strangeness of a legal style of writing, only 2 per cent of a group of teachers grasped the important ideas in the "state's share" clause in their retirement act, though the clause was written in sixth-grade vocabulary and the question was simple and direct. Students of insurance, who were no more intelligent, did much better and grasped it more quickly because of their familiarity with such matters and modes of expression.

In short, it is a prerequisite for effective learning that the learner be not ill or emotionally upset, that in ability and preparation he be capable of the task before him, and that he be interested in learning.

Practically, readiness involves many factors. Reading readiness is a matter not simply of general ability but also of neuromuscular skills in exacting use of the eyes and in handling a book, of vocabulary and information such that what is read can be understood, interests which cause a desire to read, and familiarity with language usage so that differences in language units are sensed and narrative is listened to and understood. And readiness will be in part a function of the relevance of material and task; thus large print, attractive pictures, and appealing topics may bring readiness to read earlier than if the materials were less favorable.

One special issue may well be mentioned here. The pupil should not, so to speak, be overprepared—already know what is to be taught—for there are few things more wearisome than to be taught what one already knows. Yet time and again a child who has learned to read at home is put through the grind of first-grade learning; a boy "quick at figures" must write out interminable arithmetic problems which he can do in his head; a young man who has had excellent grounding in American history from high school courses and reading for high school debates must nevertheless take American history as a college freshman. Thousands of intellectually superior youngsters have been bored to mediocrity, classroom misdemeanors, truancy, or the abandonment of any further educational career by such stupid programming. The present reaction against the rapid advancement of bright children frequently results in just this sort of thing, and schemes of "enrichment" which are little more than educational "busy-work" only make the situation worse—these bright youngsters soon see through such schemes. The reader will find it worth while to review situations of these types which he may have observed or experienced.

Relevance of School Work to Child Needs.—It is further necessary that the work be so congruent with the pupil's experience to date, the life of his community, and his felt needs and future plans that it has an appeal to him. In the chapter on interests it was pointed out that there is a gradual development in the nature of children's interests from the active and dramatic to the more social, complex, and intellectual, and that there are differences in the interests of girls and boys. It was also emphasized that the children's interests are influenced by the adult activities with which they come in contact. In the secondary school many students become acutely conscious of their vocational problems. Throughout the school years pupils are greatly influenced by the attitudes and conventions of the groups with which they associate.

All these factors have important bearings on the effectiveness of a pupil's learning. *The school tasks and the manner of approach to them should be carefully considered with reference to these factors.* The elementary school has realized this; but conventional high school (and also college freshmen) programs—with their mathematics, formal composition, beginning language, and emphasis upon drill—are often grossly out of relation to the interests and modes of thinking of the alert, modern-minded, intellectually impatient adolescent groups involved. Sex differences are rarely recognized as much as they should be; girls are given curricula derived from masculine needs in business or preparation for the professions rather than home economics, child development, and other work relevant to their own probable future needs. School programs now make more contacts with community life than they once did, but these contacts are still usually episodic and incidental rather than integral. Conservative school men deprecate rather than utilize vocational interests. Attitudes of the student group operate in various ways; there may be the convention that "C" is the "gentleman's grade," or the attitude in a group of grade school boys that to join in the singing lesson is sissified. The reader should review and make notes upon his own school experiences with reference to these points. The aggregate of such malcoordination between the learner and his task will probably be considerable.

The curriculum is certainly an exceedingly important determinant of the effectiveness of learning, yet from the point of view of the psychology of learning it has received relatively little research attention. Very interesting research might be done. One segment of subject matter might be chosen which was excellently adapted to the class in question in the various ways above mentioned, and the material taught so as to bring out all the relations to pupil interests and community life. Another section of subject matter might be selected which was initially equally little known but was relatively isolated from the pupils' interests and community experience. The first task would undoubtedly be learned both more easily and more adequately, and the teacher's work would be much easier. For one thing, the pupils' extra-school experiences and the whole community would be helping her.

A first problem in teaching may therefore be stated as the provision of goals and activities which are the best possible fit for each pupil's abilities, accomplishments, and interests. There must be a matching of school and pupil through readiness of the learner and relevance of the material. Such static matching of school and pupil, however, has left undiscussed certain dynamic problems in getting the pupil to move forward, to try to learn. How then may interests of pupils be most effectively mobilized to motivate learning? This is the purpose of the section which follows.

Motives and Incentives

The problem of pupil motivation is one of the most important and difficult that the teacher faces. For if the pupil is strongly motivated to learn, certain difficulties in readiness may be overcome; if he is more motivated to do something else, "pupil-adjusted" materials may do little good. The task is not, however, somehow to create in a passive pupil a desire to learn, since already he has many and varied interests and is strongly motivated in various ways. Rather the problem is so clearly and effectively to relate a pupil's schoolwork to his felt needs that he strongly desires to carry on these school undertakings.

Problems in the Use of Interests.—A first and excellent thought in obtaining this student motivation is to relate activities to the various fields of interest each child has. But certain problems arise in simply pursuing topics of immediate interest to each child. The chapter on interests clearly brought out that all children of a given age are not interested in the same thing nor is a particular activity usually of major interest to even a majority of them. Thus in Table 4 few of the ten most-liked activities at the four age levels had a majority vote from children of that age. Children who like a given hobby, for instance, will not be interested in it for the same reasons. It should also be pointed out that a child often hits upon a field of interest more or less by chance; it is often not the best one he could have chosen. However, the urges or drives behind each child's expressed interests are basic and much more constant. Activities serving such basic needs are sure to motivate the pupils. Fields of interest provide an initial means of attracting the attention of pupils and furnish clues as to their basic drives. But the teacher must understand the child in terms of his underlying drives in orientation to the surrounding environment; teaching then becomes the provision of activities in terms of this dynamic situation.

Thus, one teacher found that most of her pupils were interested in stamp collecting. She could easily have related the study of geography to this common interest but realized that it would have to be a geography of stamps to be effective. Rather she decided to find out why each student so enjoyed stamp collecting and then planned to relate the study of geography to these more basic motives in each pupil. One boy put great effort into this hobby because the size of his collection gave him social status; another had found that he could make money trading stamps; another was curious about strange lands, etc. The boy who wanted status seized the chance to study and make a collection of airplane maps; this was a more manly and a rarer knowledge and was more related to the course. And, of course, the boy who was curious about foreign lands was glad to study unadulterated geography.

The chapter on interests discussed the range of children's interests, their origins, and their changes with age. The basic drives which underlie these interests were also listed: the sex drive, the desire for approval and status among peers and adults, and the drive to mental and physical activity. There remains the problem of more specifically bringing out the relationship of these drives to school procedures.

The Sex-Social Drive and School.—The sex drive is the one need of a definite physical nature which through the school years cannot ordinarily be satiated and therefore insistently motivates behavior.[2] It has already been shown how widely and pervasively this urge operates in determining the nature of activities participated in and the content of reading and conversations. After pubescence, boys and girls are strongly motivated to learn how to please, to become acceptable, and to win the confidence and affection of persons of the other sex. Almost overnight, youth learn things their parents and teachers have been harping on for years: cleanliness, better manners, better English, better posture, etc.

The many requests from students for help in sex-social adjustment indicate a definite curricular need. Elective home economics courses for boys covering such topics as etiquette and grooming, an innovation of recent years, have been highly successful. The sex drive may also be an important factor in other activities. Dramatics, for instance, gives the adolescent occasion for social mingling, learning to act correctly (according to script), and appearing in a socially applauded role. As a result, much effort is put into the necessary learning of the part.

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[2] Little school motivation is usually to be obtained from most other physical needs. Parents may send their children to bed without dinner to insure later correct behavior, but teachers are not permitted to use this device. It is interesting to note that school lunches for the undernourished represent a departure from school routine. The school program is almost entirely unrelated to other physiological needs (thirst, oxygen, temperature, pH constant, salt ratio, etc.). When physiological imbalances (pellagra, poor ventilation, depression malnutrition) occur in children, schoolwork tends to be poorer.

Many teachers, however, do not take advantage of this incentive in school, and may, in fact, try to thwart it. Thus, students of the opposite sex are not allowed to work together during class, information pertaining to sex is expurgated or placed in a never-discussed appendix, and extracurricular activities and dating are looked upon as distractions from schoolwork.

An anomalous expression of this drive is sex rivalry. During pre-pubescence this is expressed almost entirely as a desire to play in a group of one's own sex and an indifference to the activities of the other sex. But with pubescence there is a coordination of the existing pre-pubescent attitude with the desire to be with the opposite sex. The items emphasized (e.g., strength, size, mechanical ability, etc., by boys) are an interesting form of "preening feathers" during the courtship; during rebuff experiences in getting acquainted, such an emphasis on sex differences gives feelings of security (success). Yet teachers occasionally use sex rivalry as a competitive motive, e.g., boys vs. girls in spelling, or they may make statements that girls are more polite or write better and boys do arithmetic better. Such an approach makes the scapegoat feel inferior before the opposite sex; he is thus made to dislike the project being studied. The teacher may, however, gain excellent motivation in promoting activities which permit one sex to display its powers before the other for, as shown in the chapter on interests, both sexes like to participate in common social activities in order to permit acquaintance opportunities.

Social Sensitivity: Seeking the Approval of Own Age Group.—By the time a child enters school he is strongly habituated to being with other people. Further, he has learned the advantages of playmates and parents and the disadvantages of their ostracism. Later on, threatened group security may seem so important as to overpower an individual; all else pales before his desire to improve his status. It is probably not too much to say that this is the strongest motive present in children (in adolescence the sex-social motive combines with it to add strength).

How does the desire for approval of one's own age group affect schoolwork? The most frequent statement and complaint is that this drive interferes with studying. Fraternity, athletic, and romantic activities seem uppermost in the students' minds. And among the social isolates the drive to become accepted seems even stronger (except for an occasional emotionalized, compensatory escape in study which may actually be bad for the student's total adjustment).[8]

Students will work harder for the approval of their own age groups than for their teachers. Interesting here is an experiment (27) with two groups of college students. The first group consisted of 10 freshmen fraternity initiates who, on the last evening of a very strenuous "hell week" involving little sleep and much physical fatigue, with the numerous embarrassments and emotional stresses common to such occasions, were required to spend 24 five-minute periods working arithmetic problems; they were told that the results would play a part in considering their admission to the fraternity. This same work was later asked of 54 students working under ordinary classroom conditions and presumably little fatigued or otherwise harassed. Yet the 10 strongly motivated freshmen did remarkably well—almost a third more work than the group working under ordinary class conditions.

Obviously, the school should take advantage of this drive rather than try to ignore it or buck against it. The shrewd school administrator uses fraternity or other student groups to get things done. The floats of rival groups make a fine home-coming parade, group-sponsored assembly programs finally reach a crescendo of perfection, and membership standards raise academic performance—until after initiation (29)! Wise administrators and teachers may assist desirable groups to organize and relate their work to the school, help non-members to develop personalities which will be acceptable for membership, and suggest constructive activities which involve participation by students of various abilities and personalities. Larger school or community projects may be suggested so that all groups and persons have something to work for together. In these ways the friction between cliques and the ostracism of non-members may be avoided and schoolwork helped.

The teacher's problem here is to relate her class activities when possible to the goals of some accepted group. Available spontaneous groups are usually not interested in most class activities. Special groups may be set up such as subject clubs in Latin or science, but such social artifacts are likely to be anemic. The clever teacher should be able to develop enough *esprit de corps* right in the classroom. Such group spirit has to be of sufficient strength that the members want to work together and will feel the disapproval of their fellows if they do not. The class activity must be vital enough to present and support this group interest. Many teachers fail in doing this, for just any grouping —and any task—will not work. For instance, many teachers try one side of the room against the other, or chosen sides called the "reds" and the "blues," or arbitrarily assigned committees. Teachers worry because class elections are listless and subject clubs stumble along. Such groups have no structure or cohesiveness *in the students' minds,* so why should students make any extra effort?

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[8] The teacher must appreciate that a child's insecure status in any group may affect his schoolwork. A child in a home which is breaking up, the child who is new in a community, or a person facing a broken romance will have such feelings of insecurity that schoolwork or teacher approval may seem unimportant. Indicative of the frequency of these distractions is the finding that 68 per cent of the persons in a community change their address within five years even in stable settlements where 80 per cent own their own homes (40). In Detroit in the typical school, 36 per cent (range 2 to 95 per cent) of its pupils change schools each year. Among the various pressures in a student's life there are definite priority ratings; comparatively, schoolwork for future adjustment does not seem immediate or very crucial. In any crisis threatening personal status, all energies must be turned toward personal "total defense."

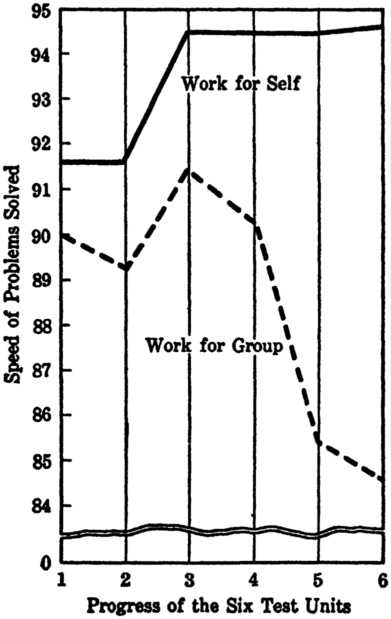

Chart 64.—The speed of work for self and group during six test units. Each test unit represents two minutes of work. (From Maller [31.])

In one experiment (31), 1538 upper elementary pupils were asked to do simple addition problems under different types of incentives: without any special incentive, for self (competitive scores and prizes), and for group (contest between classes for high standing and prizes). The pupils were also given seven extra trials which they could use for themselves or for the class as they wished. But these classes, if typical, probably had little group structure and we-feeling. The pupils had probably been arbitrarily assigned to their groups, and the teachers had done little to give the group a feeling of cohesiveness. Chart 64 shows that work for self increased with each trial, while work for group decreased. And in assigning their seven free trials the pupils gave almost three times as many to self as to the group.

Education, to its detriment, develops intensely individualistic and competitive attitudes in its pupils. Illustrative is the experience of one of the writers with term papers in one of his classes. Each term the students are given the opportunity to work together in self-chosen groups of two, three, or four to turn in a single report, or they may (as usual) work individually. By dividing the work, a group should be able to do the project with less effort and the pooling of ideas should also make for a better report. Not over a third of these college students has ever taken advantage of this offer. Why? So much schoolwork is centered upon individual attempts to seek the approval of the teacher that the group structure, if any, is one of competition. A student is not apt to help another because the latter might thus obtain a more favored position in the grade distribution. Moreover, in most classes any cooperative tendencies on examinations, recitations, or written work are squelched and regarded as unethical. Openly to work together and for the common good is contrary to all previous attitudes and codes of school conduct.

Further research upon incentives is especially needed to determine the possibility of social motivation of a cooperative or a group competitive nature. It is already clear that group competition can increase individual output; for instance, a team of sixth-grade children which was frequently informed of a gain over a competing group originally equal in arithmetical ability, was greatly stimulated to more and more effective work by both the competition and their own success (24). Anecdotes of students' heroic efforts on athletic teams (after all, a coach is a teacher) give some notion of how much more occurs when competing under a high *esprit de corps*. Children in a rural school who engaged in community health and other similar projects learned far more than children in control rural schools who were motivated in the traditional manner (10). The next chapter presents descriptions of other classes which worked cooperatively on group projects; such symptoms of high motivation as voluntary working after school hours are frequent. There is need of further research on the effects of group structure of the classroom on motivation. How effective is group competition as compared to group attack on community problems without a competitive element? What are the most effective ways of building up group morale? Can a classroom be developed into a real "team" to carry forward its educational undertakings?

It has been pointed out that American children's tendency to be most highly motivated by competition and by opportunity to gain for self may be a product of our competitive and individualistic culture. They are taught to play games in which they try to get the better of their playmates; movies and success stories glorify the persons who push ahead and get things. Some primitive people are as cooperative as we are competitive;[4] among children in Russia the motivation seems more cooperative. The war may develop a more cooperative culture in our country. There is no good reason for supposing that social motivations may not be greatly changed. In fact, there is some reason for believing that competitive attitudes are more common now among school children than a hundred years ago, because of the influence of competitive games and marking systems, and social stratifications and decreased neighborliness among adults as compared with the greater community feeling of the earlier American community.

Social Sensitivity: Seeking the Approval of Adults.—How may the desire for approval of teachers, parents, and other adults affect schoolwork? It is obvious that adult approval is of importance to the student. On entrance to school the teacher appears as a parent-surrogate; the child continues his pattern of attempting to win adult approval and affection. And as the adolescent becomes aware of adult society, he also appreciates adult recognition and approval as in athletic and dramatic performances before the public and in school news in the daily paper.

What effect does the approval or disapproval of the teacher have on learning? Some evidence is available as to the relative efficiency of praise and blame when given to a whole group; these effects might be even greater if the praise or blame were given personally to each student. In one investigation, fourth- and sixth-grade children in one group were named and praised before the rest of the class for their good work in arithmetic; the children in a second group were named and reproved in front of the class for their poor work; those in a third group were completely ignored, although they were in the room and heard the praise or scolding given the others. A fourth group was in another room and knew nothing of what was going on, but took the tests at the beginning and end of the experiment. The experiment continued for several days; the results are shown in Chart 65. At the end of the period, the children who had been praised showed the greatest progress, the reproved ones less, the ignored ones hardly any; the control group, who were neither praised nor blamed and knew nothing of any recognition being given to anyone's work, actually decreased in efficiency (23).

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[4] Fascinating material on this problem will be found in Margaret Mead's *Cooperation and Competition Among Primitive Peoples,* McGraw-Hill, New York, 1937, 531 pp.

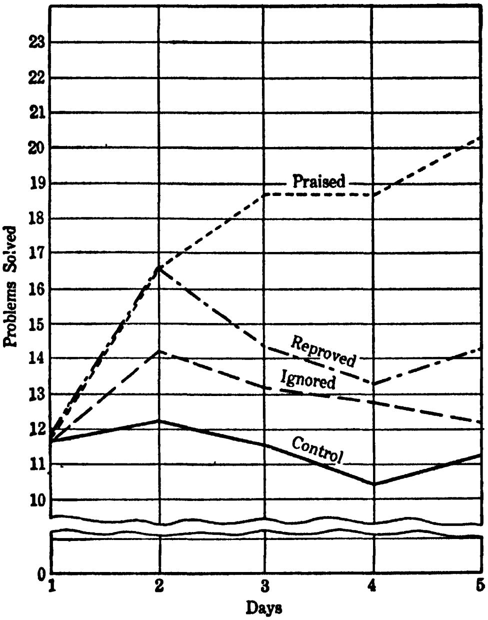

CHART 65.—Curves of work under various incentive conditions, as measured by average scores on arithmetic tests over a period of five days. (From Hurlock [23].)

Sarcasm on the part of teachers is the most common single cause of difficulty in reciting and dislike of certain teachers reported by college students. Chart 66 indicates that sarcasm does more harm than good. In each of three studies college students were asked to judge how their high schoolwork had been affected (did better, the same, or worse) when a teacher had been sarcastic. All three investigations agree that when sarcasm was used on an individual before his classmates, the proportion was eight to one that he believed he did worse afterward than that he did better! Note that few were unaffected ("same") by such stimulation before others. Sarcasm rendered in private seemed less harmful but still did more harm than good. The wide variability here in the results in the three schools may have been due to differences in the teachers whom the children had in mind as giving the sarcasm. More studies in the social dynamics of the classroom need to be made. Would sarcasm by a well-liked teacher cause more motivation? Would it tend to cause a teacher to be less well liked? What, comparatively, would be the effect of encouragement upon work, upon pupil attitude toward the teacher, upon the teacher's own attitude toward the pupil? The evidence from the third line of the chart seems to indicate that most students listen more or less as disinterested spectators to teacher attacks on others; of the remainder, more side against the teacher than with her. Later it will be shown that aiding the learner in discriminating wrong and right answers is helpful to him. But the above evidence seems sufficient to show that this should not be accompanied by emotionalized attacks on the ego structure of the individual.

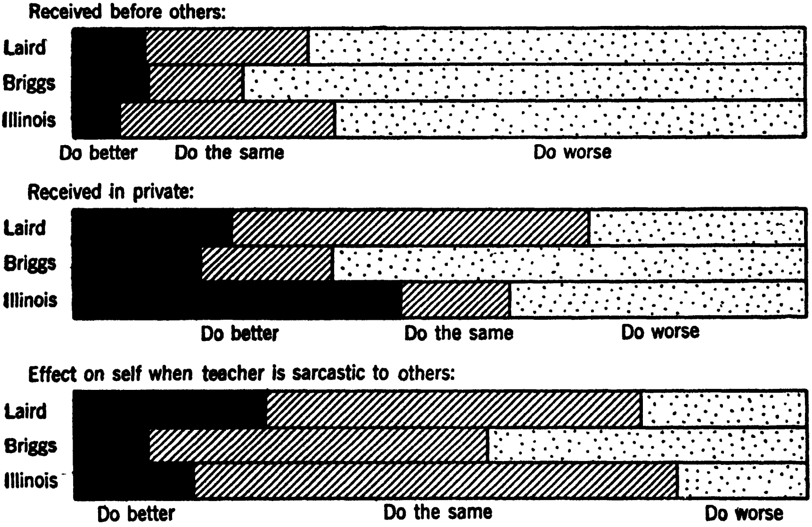

Chart 66.—The effect of teacher sarcasm as reported by students. (From Briggs [5].)

The attitude of parents and interested friends toward schoolwork may affect the work of the student. While this motivation usually helps the teacher, in certain instances these adults may be critical of what is being done in the schools, and the student may thus be motivated not to do well. This is particularly true when educational practice differs markedly from that which the parents had or from that in the surrounding schools. "Progressive" schools face this difficulty constantly. Pupils from these schools often feel disapproved because they have not taken number work (as such) or have not had other formal units which outsiders use as the measuring rods of progress.

If adults commonly believe that an education is necessary for future adult security and success, students will also accept this belief and so be motivated. Our long tradition of free elementary education makes adults disapprove of the illiterate and makes each pupil highly motivated to learn to read and write. Secondary education for all is a phenomenon of recent decades, but an attitude that high school attendance or graduation is expected of youth is developing in many communities. On the other hand, many parents have not attended high school and so may believe this education unnecessary; other parents had only mathematics, foreign language, and classics in their high school or academy and hence may not see the value of the "newfangled" programs now offered. Paradoxically, then, the teacher has the problem of selling secondary education to adults as a means of motivating adolescents. Students from certain high schools do better in college than students from other high schools, even when both groups are equated as to type of community, ability, and accomplishment (54); it seems likely that differences in neighborhood attitudes as to the value of an education are important factors here.

Teacher compliments provide a glow of pleasure and so increase a student's interest in what he is doing. But will a child work hard beforehand in order to secure the teacher's praise? That will depend on the teacher, for children are selective in seeking sources of praise. They will work hard for praise from a person whom they admire; a teacher should not overlook either the opportunities or the responsibilities which may come from being so regarded (11). Most persons can remember some elementary school teacher for whom they offered to clean erasers, and some teacher in high school who was highly admired. Students on entering college often express great interest in some field and perhaps declare that they expect to find in it their future vocation; inquiry usually discloses that some very likable teacher taught that subject in high school.

Often there is imitation of the mannerisms and views of an admired adult. Thus students may walk and talk in the manner of the popular football coach. The school administrator by his selection of teachers may use this tendency as a way of "teaching" youth.[5]

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[5] What are the characteristics which successful teachers have and which students admire? Starch, Stanton, and Koerth (48) have summarized some high lights from available studies. One experimenter found sympathy, judgment, self-control, enthusiasm, stimulative power, and earnestness to be of primary importance. In another study where successful and unsuccessful teachers were compared, the main difference was in "creativeness," with "emotional stability" second. In a third study, 10,000 high school seniors gave the best-liked teacher these four leading characteristics: helpful with schoolwork, cheerful, friendly, interested in and understands pupils. It is evident that there is much more to teaching than scholarship.

The teacher of history or literature may also gain through use of this incentive. The typical hero of a young child is a parent; later a teacher or other person he knows may be so admired. By later adolescence, however, the student has usually found that all local living persons have "feet of clay," and he typically turns to distant contemporary figures or to historical heroes for his idols. He will read avidly concerning such a personage and try to be like him. Even children's food preferences have been changed by making some disliked food the favorite dish of a story hero (14).

Social Sensitivity: Seeking Prestige and Status.—Children strive not only to remain within the approval of peers and adults but also to bolster their "social security" and to obtain prestige. Because most youth have had so many experiences of insecurity in a social group, they want to build against future occasions; they want to oversecure security. They are eager to learn how to get along with one another; to know about etiquette, grooming, social skills; how to win friends and influence people; how to succeed. They also want a higher status in the social group than mere acceptance. Imaginative statements of what children want to be (either at their present age or as adults) usually include characteristics so outstanding that much praise will be given, restraints will be relaxed, or extra privileges obtained. This drive for prestige, however, is associated not only with the desire for good or preferential treatment from others, but also with the development of self-esteem. Each person seems to desire evidences of his superior worth and will strive beyond mere average accomplishment to fulfill such a purpose. A student may select some aspect of his schoolwork for building prestige or personal security; in such instances high motivation and performance are to be expected.

While the child thus strives for a higher status, he also relishes the comfort of his present adjustment. This produces ambivalent responses which tend to be unpleasant; the desire to escape the unpleasant feelings in turn adds to the motivation to do something about the situation. When a freshman goes away to college he is motivated to show he can "get along" in

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Yet the following quotations from one study show that adults' memories of their childhood teachers often emphasize only oddities of personality: "My, but I was afraid of her . . . but she always smelled wonderful." "We liked her in spite of the fact her white collar was never quite clean." "The only thing I can remember is that I always dreaded to see her come down the aisle . . . she used to lean over our shoulders and mark corrections on our papers . . . she never read the halitosis ads." Other teachers, of course, may be remembered for their stimulating teaching, but the chances are only about one in ten of being remembered at all. It is a sad commentary on the effectiveness of a group especially trained and selected for educating youth (19).

his plan to become an independent adult; he also misses the comforts and care in his home. As a result he is apt to be feverishly busy trying to join in activities so that he may belong on the campus, and at the same time he writes letters and visits home more often than he will later as a sophomore. Such a direct conflict tends to cause emotional upset—in this case, homesickness. The college may keep the student busy and happy with "success" activities which make him acquainted and seemingly accepted on the campus. It may also obtain motivation for schoolwork by providing measures of school success (honor rolls, committee appointments) which indicate progress toward "adultness" and also increase family pride through home-town publicity.

The teacher may take advantage of these conflicts between new goals and earlier habits. The primary teacher slips easily into the role of mother substitute; the child, being conditioned to follow directions, readily does what he is asked. During adolescence such motherly direction will be resented in light of the youth's attempts to become independent and mature, but there will still remain some residual ambivalent comfort in this direction when he asks for it. During adolescence boys like activities which place them with the opposite sex but often enjoy single-sex activities which bring out their superiorities. Youth seek opportunities to develop independence from home, yet this is one of the periods of greatest family pride; they like to make things for the home, dwell on ancestry, and read about famous families.

Adolescents may strive for a higher status than do adults. Altruistic and religious interests tend to reach their highest peak during adolescence. Adults come to appreciate how long it takes to make a little change in the world; their goals are therefore set less high. Adolescents are afire with a zeal to fix things up. They often have some feeling of persecution and restraint from adults which fires their ardor. As in politics, the "outs" have very strong feelings as to what might be done. As a result, many students complain that schoolwork seems a marking of time, a repeating of old experiments, and a general busyness. And they may eagerly seize opportunities to help in constructive projects for the community or to campaign for a cause.

As mentioned earlier, the term "level of aspiration" refers to an individual's belief (or hope) concerning his level of attainment on his next trial in a given activity. Thus, if a student has received a "C" on a test and hopes to get a "B" on the next, his level of aspiration (the "B") is one letter grade higher than his previous grade. Another student who also made a "C" might wish to make an "A" the next time; his level of aspiration is even higher. The difference between the goal (the "B" or the "A") and the actual just previous performance ("C") is known as the *average discrepancy score*. Such goal setting has obvious implications for the psychology of motivation. What factors influence the declaration of a goal? Is there any most efficient deviation between hopes and performance? If so, what factors or experiences are most important in determining this efficient margin?

This field of research is of such recent origin that answers to many of these questions cannot be given. It has been found, however, that the average discrepancy scores for successful school children tend to cluster closely about the average for all children, whereas such scores for unsuccessful children tend to deviate widely. This is illustrated in Table 39. The great majority (from 58 to 83 per cent) of the children who received good grades in school tended on new reading and arithmetic tasks to set levels of aspiration about an average distance above their just previous performance. On the other hand, only a minority (17 to 33 per cent) of the children who received poor grades in school tended on new reading and arithmetic tasks to set levels of aspiration about an average distance above *their own* just previous performance. The third column in the table shows for a third group of children the interesting differential effect of good grades in reading and poor grades in arithmetic. On new tasks in reading, these children set levels of aspiration which tended to be an average distance above previous performance, but in arithmetic these levels tended to deviate from the group average. Thus, the unsuccessful child seems to state a level of aspiration which either sounds good but is out of reach or is so close to performance as to be easily attainable. Later success experiences tend to bring discrepancy scores together; later failure experiences tend to cause greater deviations (46, 3). The question still remains, however, as to whether the average discrepancy score is the most effective difference

TABLE 39.—The Effect of Children's Previous Success and Failure in Reading and Arithmetic on Their Average Discrepancy Scores for New Tasks in Reading and Arithmetic (46)

	Good Grades in School	Low Grades in School	Reading Grades High, Arithmetic Grades Low
Reading			
Low discrepancy score	8%	25%	17%
Average discrepancy score	83%	17%	83%
High discrepancy score	8%	58%	0%
Arithmetic			
Low discrepancy score	25%	17%	17%
Average discrepancy score	58%	33%	33%
High discrepancy score	17%	50%	50%

for efficient stimulation to learning. The data above represent only the characteristics of good learners, not their relationships to the amount learned in a single situation. More research is needed on this point.

The Drive to Activity, and Curiosity.—Children are normally active—running, jumping and shouting, manipulating, talking, looking about, listening to all that goes on. The inactive or apathetic child usually causes concern for his well-being. Activity leads to meeting new stimulations and making new discoveries; it might be said that it is impossible to keep a normal healthy child from thus learning. The barren front of the conventional schoolroom and restrictions against moving about, talking, or even glancing aside at classroom events or happenings outside the window "force" the child to attend to the teacher. But these restrictions greatly limit learning. It is as though one forced a child never to move more actively than at a sedate walk, and then wondered why he never learned to run or jump or climb. If a school will only provide many and varied opportunities for activity, exploration, manipulation, and conversation, interest will mount and learning be greatly furthered. The young people will work with great intentness for long hours, day after day, on a hobby. That the schools more often stifle than stimulate this drive is indeed ironic.

Biographies are full of evidence that many famous people began their lifework as a youthful hobby. The story of Edison's boyhood experiments with chemistry is well known. A recent fascinating book on the history of aviation begins with a vivid account of the author's youthful study of that subject. Though only in their middle teens, he and his chum studied far into the night, planned their own experiments, built model and then "boy-carrying" planes—worked with the intensity and the efficiency of true scientists. And the aviator's life career was thus begun.[6]

A famous biologist tells how a boys' nature study club in a Minnesota town stimulated several of its members to professional careers.[7] In fact, there is much to indicate that many young people have capacities for constructive endeavor which are in reality marvelous but are wholly untouched by the average school.

Such a drive to activity, if the activity is exploratory and the matter dealt with new, is often called curiosity. Children are eager to find where things come from, how things work, what things are made of, and what other people are like. The desire to understand the unknown thus represents a real drive. Our culture tends to reward those who

[6] H. A. Bruno, *Wings Over America,* McBride, New York, 1942, 333 pp.

[7] C. J. Herrick, Young naturalists' society, *Sci. Mo.,* 1942, *54,* 251–258.

are curious; much motivation in schoolwork may spring from a desire just to know. This motivation is selective, however. Thus, when people were asked to rank three different books in order of their interest in reading them, and then were given three-hour reading assignments with later tests on their first and third choice, a reliable difference (14 ± 3 per cent) in learning was found in favor of the first-choice book (49). There should be sufficient choice to reach many different interests in many different ways, and freedom to develop these interests in many ways.

A seeming corollary of this drive is a desire for freedom for such action. Limitations and barriers cause a person to feel frustrated; as a result he becomes emotional in his thinking and strikes out at the frustrating agents rather than more constructively striving for his original goals. It will be remembered that autocratic and *laissez-faire* group structure resulted in increased conflict behavior and in less efficient learning than in a well-directed group. In trying to act mature, youth frequently meet the frustration of withheld parental or school permissions. Often they consider these denials unfair and expend their energy in striking out at parents or school—e.g., arguing that they are adult enough to do these things—rather than attempting to attain sufficient judgment that permission will be granted.[8] The full efficiency of motives may be obtained if the teacher can give judicious direction to students but at the same time also give a feeling of freedom for action.

Extrinsic vs. Intrinsic Motivation.—It has been obvious that activities which fulfill the above drives will be seized upon with great vigor. When these basic drives are operating, the young person needs no prodding; rather the teacher's problem is to provide books to go to, tools to work with, and projects to engage in which satisfy these drives. What the pupil is doing is so closely related to his desires and interests as to be *intrinsically motivated* by their inherent significance for him.

As the reader looks back over his own schooling, he may find that his teachers often used a different approach to motivation. The pain of physical punishment may have been one motivator they employed. An arithmetic lesson was done not because of interest in it but because of fear of chastisement if it was not done. Perhaps the threat was social punishment—ridicule or sarcasm or being publicly sent to the principal's office. Fear of low grades is so used by most teachers. With such motivation the pupil's efforts are directed toward appeasing the teacher rather than learning the lesson as something worth while in itself. These are therefore called *extrinsic motives.*

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[8] Youth emphasize their physical characteristics as proof of adulthood; adults emphasize intellectual judgment. It is difficult for the adolescent to appreciate that he doesn't fully possess the latter, and he notes that in the intellectual fields emphasized in his schoolwork (names, dates, mixed fractions, geographical detail) he already excels his parents. Little wonder that there is a feeling of frustration! Other frustration sources should also be recalled; for example, child labor and school attendance laws prevent earning sufficient income, and voting and other privileges of community participation are denied until he is 21.

Since these extrinsic drives are so easily and so often used, their efficiency should be considered. First, how effective is the use of fear of failing grades as a motivating device? In one study 18 classes in four school systems were divided into two matched groups. Half of the teachers announced several times during the term that those who did not work would fail; the other half of the teachers announced several times that everyone would be promoted, e.g., that no one would fail Both groups did equally well, even at the lower end of the distribution of intelligence (37). After getting low grades, students seem to become discouraged. In college there is a correlation between low grade-point average and shortness of stay in college even above the level of college dismissal. Hence it must be concluded that fear of failure does not motivate very well during a course and that receiving a poor grade has a discouraging rather than a stimulating effect.

The evidence of the disturbing effects of emotion upon accomplishment presented in an earlier chapter suggested that punishment (reproof or failure) quite often disorganizes further efforts. There is excellent reason to suppose that the corporal punishment frequently resorted to in the old-time school room largely defeated its own purpose. Sarcasm has been shown to discourage effort.

Teachers frequently use the announcement of an examination as a motivating device. In one study (25) matched groups took the same course, but one was told that the examinations would not count in their grades. At the end of the course the group in which the tests had counted knew more than the other group. However, such an emphasis on examinations as a motivating device tends to produce dated learning; that is, the material is remembered until the examination is over, but forgetting is rapid thereafter. For instance, in one experiment a group was told that there would be an examination the next day and another group was told that the test would be given some time later. The test was actually not given for some time, and the group that prepared for it the next day did much worse (1).

Other extrinsic rewards are effective, at least temporarily, in producing learning. In one study the difference between the use of no reward and the use of extrinsic rewards was measured. In the no-reward situation, fifth-grade pupils were asked to do multiplication problems in a situation where neither they nor the teacher (apparently) knew how well they had done. In the three reward situations, the best were given candy bars or had their names put on the board in the order of their speed, the fastest being called captain, or a combination of these rewards was used. The chocolate reward caused 52 per cent improvement, the rivalry 47 per cent improvement, and the combination 65 per cent improvement over no motivation (30). Another study was made of the effects of competition as an incentive. With certain pupils it was found that rivalry between two children in a pair had more effect upon the work done than group competition between two halves of the class where the motivation came primarily from contributing to the total score of the group. Competition between groups, however, was better than no motive.[9]

Several studies have been made of the effect on learning of increasing the intensity of motivation (increase in the size of reward). Children were asked to learn codes or ball tossing, and each time a child was successful he received $\frac{1}{10}$ cent, $\frac{2}{10}$ cent, $\frac{4}{10}$ cent, and in one study $\frac{8}{10}$ cent.[10] Changing the size of the reward did not cause faster learning (44, 52) unless the change took place during one experimental period. In this situation the contrast seemed to give some benefit to the higher-priced incentives (52). If this contrast is continued by giving an increasing bonus each time pupils break their former record of performance, the increasing motive has an accelerating effect on performance. In one study the curve of production continued to rise during ten weeks of daily testing (17); such a plan, however, would not be feasible through years or even one year of schooling.

A study mentioned above showed greater gain if two different incentives were used together. Most investigations have found little gain from such combinations, however. Thus, children 2 to 8 years of age were asked to learn certain motor skills. Sometimes the only reward was success (knowledge of progress); at other times praise was added to success, or reward (gold stars) was added. No significant benefit was obtained from such combinations over the use of knowledge of progress alone (7). Other studies have shown that merely telling a person he is "right" is just about as effective as giving him money in addition to telling him he is "right" (44, 52). Hence not much is gained by strengthening or summating extrinsic motives unless in immediate contrast to lesser motives. This is occasionally done by teachers who isolate certain sections of an assignment as areas with drastic consequences if not learned or rewards if learned.

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[9] It will be noted that in these studies competition has been classified as extrinsic motivation. The work done by the children did not naturally call for competition, nor was it the type that students would normally do if they wanted to compete; the idea was the teacher's and was forced upon the pupils. These studies thus represent the use of extrinsic motives.

[10] During an experimental period of an hour, the children averaged over 60 cents each in rewards; such a sum must have assured high motivation.

While extrinsic motives have been shown to be effective, the results in terms of the total picture of schoolwork have been on the whole disappointing. In a study of the effect of such rewards as stories, games, Easter party, play period, and praise and blame on the work of an actual fourth-grade class in addition, the results were so little different from performance without any of these incentives that the authors concluded: "These commonly used incentives are not as effective as might be supposed . . . under schoolroom conditions" (55). As the result of extensive experiments on the use of money as a motivator in school, another investigator (18) concluded that "the efficiency of the rewards was not as great as would be expected. . . . One may doubt the need of elaborate systems of external rewards or incentives for the ordinary school situation. It must also be noted that many of the rewards used in these experiments (money, chocolate) were strange to school situations. Their novelty added momentarily to their effectiveness." One investigator (17) found that if a money reward is kept constant, its stimulating effect dies down.

Extrinsic motives are not as effective as intrinsic motives. The story told earlier of how the fatigued freshmen worked much harder for the fraternity than the rested juniors and seniors did for the professor was an interesting commentary on the level of motivation in many classes. Other proof is provided by experiments in which class projects vitally related to the lives of the pupils are contrasted with routine schoolwork.

Tentative, scattered, and inadequate though the experimental work on motives and incentives may be, it has at least demonstrated the great practical importance of adequate motivation in schoolwork. If what is already known were applied to school practice, great gains in effectiveness could be brought about. Desire for social approval and status powerfully motivates young people. The praise or blame, encouragement, or sarcastic disapproval of a teacher affects them far more than most teachers realize. And children as well as adolescents are acutely sensitive to the attitude of their fellows toward them. They may devote themselves with extraordinary persistence and intentness to any matter which fully arouses their desire to try and explore and do new things—their curiosity. There are sound or intrinsic and artificial or extrinsic incentives, the first more effective. It should be a major aim of practical educational engineering to make use of these findings.

EMOTION AND LEARNING

In the past, emphasis in teaching has been on what might be termed a cold intellectual assimilation of facts and understandings. Emotions have been thought of as disturbing and disruptive, and accordingly undesirable. But the situation is not so simple. Mild feeling-states and emotions must be distinguished from strong emotions. And emotions coming with the satisfaction of a person's drives or urges must be distinguished from those caused by frustration of those same urges.

Values of Mild Feelings and Emotions in Learning.—First of all, it should be recognized that learning in everyday life outside school is by no means a colorless and impersonal affair. Children's play—which may involve much learning—is characterized by pleasant excitement. Creative work is suffused with emotional experiences. Problem situations often bring about a heightened tension and excitement which seem to stimulate learning—and new insights are achieved and accomplishments gained. It is also to be noted that inventions are likely to come in time of necessity, and creative art and music in times of heightened feeling.

A number of experiments agree in showing that material which a learner considers pleasant or likes is learned most readily, and unpleasant material less effectively, while that which arouses no feeling at all is remembered least. Table 40 summarizes results of one such investigation. The greater amount of pleasant as compared with indifferent material which was learned is especially to be noted.

TABLE 40.—The Effect of the Pleasantness or Unpleasantness of Material on Efficiency in Learning It (6)

	N	M	S.D.	Critical Ratio
Pleasant	95	29.86	4.73	9.36
Indifferent	95	24.56	7.51	-
Unpleasant	95	27.35	5.45	5.60

Confirming evidence has been varied. Thus, when in one experiment the task was to learn two sonnets, the sonnet which each learner preferred was found on the average to be learned more quickly and remembered better over a period of time (41). An early investigator tried reading a list of words to be learned to his subjects and immediately thereafter read them a passage which was "pleasant, optimistic, and cheerful." Another time he followed the list by a passage which was "unpleasant and depressing." Six per cent more of the first than of the second list were later recalled (41). Childhood memories are usually of emotionally colored episodes (13). Also of point here is the fact that the concepts and ideals one values, remembers, and brings into use are characterized by a strong feeling-tone. The dynamics of living and learning demand more than cold logic. By eliminating what might be emotion-arousing, i.e., live issues, schools have been in danger of becoming sterile and ineffective..

In general, then, what is pleasant to a person is learned most readily, and mild emotion has a tonic effect. Presumably, it is this effect which is sought by young people on roller coasters and in movie thrillers and athletic games. "Mild excitement is sought by most people and these researches give ample justification for maintaining that its effects are physically desirable. . . . Educators may find justification here for making vivid experiences an integral part of many phases of the edu-educative process" (41).

The Effects of Strong Emotions on Learning.—The unfortunate effects of frequent strong emotional frustration upon continued effort and effectiveness have been described in an earlier chapter. It need only be mentioned here that disruptive emotional experiences upset health, decrease intellectual efficiency, and create attitudes interfering with effective work. To say that a person may become "so mad he cannot think" is sound psychology. The emotionally upset pupil can hardly be an effective learner. Even brief and relatively superficial episodes of emotional shock and startle break up any consistent attack upon a problem of learning.

An interesting experiment shows how the presence of disrupting emotions may alter the quality of adjustive behavior (38). Adults were given a problem situation in which they had to discover as quickly as possible the way out of a room. The solution varied from time to time, but experience with the problem could be used as a basis for making more intelligent responses. As the adults participated again and again, their responses were rated on a five-point qualitative scale from "(A) tendency to make rational inferences from previous experiences" to "(E) automatisms, unadaptive, perseverative." The distribution of such rated responses in normal unemotional situations is indicated in the first and third lines of Chart 67. It will be noted that under non-emotional conditions over half the responses in two different experiments were rated in the highest category (A) and 3 per cent or less were placed in the lowest category (E). But when working under conditions in which the subjects received a sudden cold shower or electric shock or heard a loud horn, their responses declined markedly in quality. In these instances, about half of the responses were classified in the lowest category (E) and less than a fifth were classified as indicating use of rational inferences from previous experience.

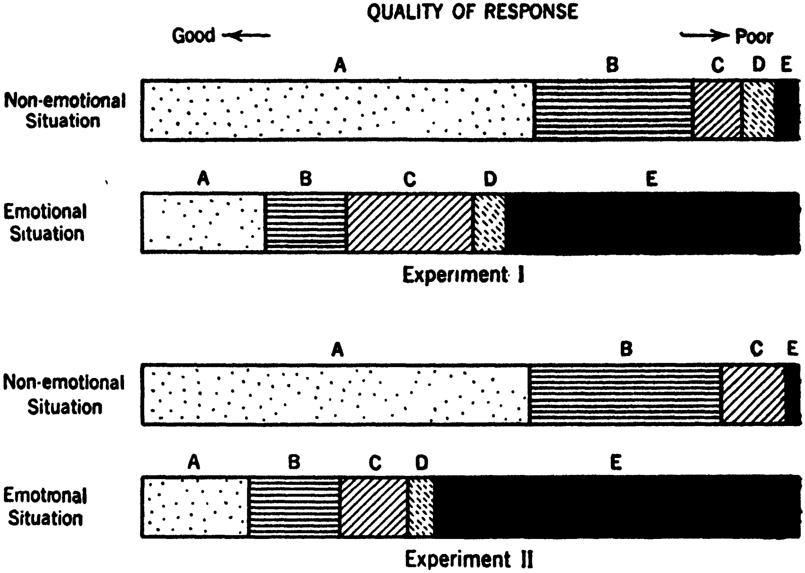

CHART 67.—The effect of emotion-arousing stimuli on quality of response in a learning situation. The quality of response varies from A (good) to E (poor); i.e., A = tendency to use rational inference from experience, C = tendency to use a stereotyped mode of searching, E = tendency to repeat a wrong response. (From Patrick [38].)

On the other hand, strong pleasant emotions, if not too overpoweringly strong, that come with the fulfillment of a strong basic drive may sweep the individual along in outstanding efforts. Thus, every success, even if minor and temporary, so exhilarated the two young aviators mentioned earlier in this chapter that they almost wore themselves out in their intense study of problems of flight. Moreover, temporary failures and frustrations only spurred them to greater efforts.

In fact, frustration may arouse an angry vigor of effort which may accomplish much. In an earlier chapter a secondary school boy was mentioned who, frustrated in his efforts to make good with his classmates in the usual schoolboy associations, worked with grim intentness in the Latin class because he found that he could achieve his desire for status because of that teacher's frequent recognition of his good work there. Not infrequently, special excellence in some field may be a compensation for failure elsewhere. But probably the most significant fact in such situations is not the frustration but the fact that the background drive for status is at last finding fulfillment.

Emotions may thus either invigorate or hamper efforts at learning, according as they are stimulating or too disruptingly strong and according as the emotion is one of fulfillment or frustration of drive. In any case, if the emotional life is apart from the school and school is a drab and flat experience, emotions will distract from and interfere with schoolwork. The boy who is worried about his home or his status with his playmates, or the girl who finds all her interest and excitement in social affairs will not do effective work in school.

SUMMARY

What (a prospective teacher is often asked) are you preparing to teach? This chapter has emphasized that the answer to this question must be "children." The logical organization of subject matter must give way to a psychological organization. The abilities, interests, and attitudes of each pupil must determine what he may effectively try to do, and how. And each pupil is different from every other in all these respects. At a given time none are equally ready to undertake a given task, nor do all need the material in a given unit. It is too much to expect a child to select what he does need from any encyclopedic presentation. The teaching situation should be an interpersonal relationship between the teacher and individual pupils. Such intimate attempts to change behavior demand an understanding of each pupil. Probably no better way can be found to summarize this thesis than to tell the story of how much difference it made in an actual school when the teachers did understand some of their pupils better.

The experimenters obtained detailed information about the students in the ninth grade of their school and carefully matched some in pairs until there were 33 in each group. This information, based on records, home visitation, test results, and conferences, was given to the teachers for each student in the experimental group. The experimenters also had conferences with the teachers to assist them in using this material to analyze the motives, attitudes, and environment of their pupils. However, the teachers had no more than the usual amount of information about the 33 control students.

All the children participated in the regular classwork, but at the end of the year the students about whom the teacher had had full information did markedly better. The grades of the experimental group were significantly higher than those of the control group. An attitude test was given ostensibly for another purpose, but buried among the items were several relating to attitudes toward school. It was found that the pupils in the experimental group were more willing than those in the control group to ascribe achievement to planned work than to chance; more of them felt that careful work in the long run would bring its own reward, that an education can be worth while, and that cheating is undesirable. The children in the experimental group felt that schoolwork had been more pleasant than in the previous quarter, had a more favorable attitude toward school companions, and had fewer feelings of inferiority; on the whole, they had a happier, more logical attitude toward school and schoolwork. On the Lurie test of personality conflict they showed a significant decrease from fall to spring, whereas the control group had a slight increase. An extensive analysis of the verbal responses of the pupils indicated that the control group had become more personalized and egocentric and showed more difficulty in making adjustment; the comments of the experimental group suggested more of an impersonal, objective, and logical type of mental life. Teachers rated the experimental group as "more interested in schoolwork" and "more adjusted in the classroom," and they considered their work much easier and more efficient with such knowledge of their pupils.

The experimenters concluded that "the data . . . are consistent in showing that when teachers learn to know their pupils as personalities in their respective environments, teachers tend to become more effective guides for learning, . . . the pupils achieve more in academic areas, . . . and teachers also become more effective personality 'developers' " (35).

It is thus demonstrably of value that teachers should know their pupils well. But what (to summarize more systematically) is involved in knowing each pupil as a learner? The major issues here appear to be three in number.

1. In the first place, each pupil's abilities, background, interests, and general physical and emotional condition must be such that the task can be effectively undertaken; and what is to be learned should be suited to each pupil in these respects. Much as a 10-month-old baby is not mature enough to be "ready" to talk, so some primary children may not be "ready" for reading. Some secondary school youngsters may be so weak in arithmetic as to be not "ready" for algebra. A person of any age may be in such physical or emotional condition that he is ineffective in any mental task. Conversely, what the school asks the

pupil to do must be suitable to his abilities, background, and interests. Tasks either too difficult or too easy, for which he does not have the necessary background, or which are not interesting to him will not be effectively undertaken. Much of the work in conventional schools is lacking in all these respects.

2. In the second place, the pupil must be strongly motivated to learn. It is not enough here to appeal to apparent interests; it is necessary instead to see behind them to basic drives and needs. Effective motivation reaches back to these basic urges. It recognizes and utilizes the desire of adolescents to be with and have the attention of the other sex, the desire of both children and adolescents to have the approval of the young people and the adults with whom they associate, and the desire to have some measure of status and prestige. If a pupil feels that he is finding satisfaction for these basic sex-social drives in connection with his schoolwork he will put himself into the work hard; otherwise, he is likely to leave it (mentally, if not physically) in an effort to find satisfaction in some other way. If he suffers injury in respect to one of these basic needs, as when a teacher publicly humiliates him by sarcasm, the work and the teacher will become disliked. Young people are naturally active and curious; the school should give them opportunity for an active exploration of many things and ideas. Such extrinsic motivation as fear of punishment or reproof is relatively ineffective, as are also artificially fostered competitions and awards like contests between two sides in a class or prizes for good work. But in the past the conventional school relied primarily on such motivations. It was at fault also in providing little satisfaction for certain of these needs, or even stifling them; thus, it sent adolescent boys and girls to separate schools, outlawed friendly working together, and gave no help to youngsters in their efforts to learn how to get along with others and achieve status with their own age group.

3. As pointed out in an earlier chapter, when an individual finds that what he is doing is meeting a felt need, he is pleasantly excited; but if his desires are frustrated he feels unpleasant emotion. Such feelings are not mere concomitants of these situations, but have marked facilitating or hindering effects. Learning that is of real significance to the learner thus cannot be a mere cold intellectual assimilation of facts and understandings; instead it is and should be a pleasantly exciting discovery of new satisfactions of interests and needs. Mild emotion has a tonic effect, and the relatively strong emotions aroused from a drive in process of fulfillment may be very stimulating as regards the school-

work involved. Only the emotional distresses of frustration and the disruptions of emotional shock interfere with effective work. The school should foster pleasant emotional experiences, and beware that schoolwork does not become drab and without emotional color, with excitement to be found only otherwise. A teacher must study each pupil's emotional life as closely as she does his abilities, if the work in her room is to go forward effectively.

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CHAPTER XIII

The Control of Learning: The Learning Situation and the Teacher

How may a teacher foster her pupils' learning? Books, assignments, problems, and laboratory materials are provided to stimulate and aid learning. But one book may be more effective than another, and one way of making assignments better than others for bringing about learning. Different ways of dealing with classes may make one rebellious or indifferent, and another eager to learn. The preceding chapter showed how the efficiency of any teaching procedure or material is determined by the extent to which it fits in with each learner's interests and abilities. This chapter considers ways in which the total learning situation and teaching procedures may be best organized to bring about and facilitate learning. In light of the extended discussion of the learner and the learning situation in this and the preceding chapter, the treatment will close with a brief general statement as to the nature of the learning process.

The Learning Situation

As a place to learn, what are the important characteristics of a classroom? The most important, but until recently least studied, is this: it is a room in which there are many other people—other children and an adult. What effect does this social setting have on learning? Are certain types of social setting more effective than others? And what about background social situations? For instance, how does a child's relationship to his parents and his peers affect his schoolwork? Obviously the social dynamics of the classroom need to be investigated in planning a program for efficient learning. Two other factors in the learning situation are also obvious: the teacher and the instructional material. There is need to evaluate the efficiency of various techniques which a teacher may use in working with children, and to determine the relative effectiveness of various types of teaching materials. In total, the teaching situation is a complex and dynamic social situation in which the pupil, the teacher, the classmates, and also the home and the community have their parts.[1]

The Importance of the Social Atmosphere.—Although the teacher is actually teaching individual children, the mere presence of the group has its effect on behavior. For instance, it tends to increase speed, sometimes at the expense of quality; knowledge of the typical level of aspiration of a group causes individuals whose levels of aspiration are low to raise them (22).

In traditional classrooms the pupils all face the teacher and recite when called upon; in other rooms a more cooperative socialized atmosphere has been tried. Arranging things so that social interaction takes place more freely seems to aid learning. In one study several classes in sociology were taught in the usual way with lectures and class recitations, but in other classes in the same subject group discussion was emphasized. The members of both groups were then tested for amount learned and for worth-while behavior traits. It was found that group discussion caused as great or greater gains in knowledge and attitude, as compared with conventional instructional methods; and the persons thus taught were more self-confident, cooperative, socially adaptable, socially responsible, and better leaders (63).

Often it may seem in group discussion that the "blind may be leading the blind," but experiments show that a particular task can be solved with fewer trials and errors by group discussion than by the average individual by himself (57, 52). For instance, a group discussing and voting on an art judgment test made a better score than the average of the test scores when the test was taken individually. Also after such discussion, individuals are able to make better aesthetic judgments (52).

An extra-class source of evidence for the value of group planning and cooperation is the effect of student government on its participants. A study (37) of a cottage of 24 problem children (ages 4 to 12) showed that after self-government was inaugurated the children came to see the necessary restrictions as reasonable, the staff ceased to be considered disciplinarians (in several instances they took the side of the culprit in suggesting tempered punishments) and so gained in rapport, and the group of problem children began to praise commendable social behavior in one another.

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[1] The fact must not be overlooked that much learning is not social. One of the writers well remembers long afternoons in his father's library pouring over the *Encyclopaedia Britannica's* article on bridges, and the resulting suspension bridge made of grocer's twine—strong enough to support the youthful engineer and a friend, with a pail of lemonade between them. Children as well as adults need and want time to be alone and to do and think without distraction; the capacity of many children for self-education might be called a great undeveloped educational resource, needing far more investigation and consideration than it has yet received.

The Effect of Differences in Social Climate.—Different socialized procedures are not equally effective. It is important, therefore, that more detailed inquiry be made into the social conditions which most effectively bring about learning. In the chapter on early social development, the story of the boys' clubs which were run in an autocratic, democratic, and *laissez-faire* manner well illustrates how a teacher may alter the social atmosphere of the classroom and through it the behavior of her pupils (31). It will be recalled that in this instance the democratic atmosphere was the most conducive to cooperation, "we feeling," lack of frustration, pride in work, and keeping on the task. The autocratic and *laissez-faire* atmospheres, on the other hand, limited freedom of action, produced aggression against the task or fellow students, and resulted in less constructive and cooperative behavior. Other studies show that pupils in a democratic atmosphere get acquainted better, make more friends with whom they do things outside of school, and have fewer interpersonal problems than in an authoritative climate (59). Not only would learning progress more rapidly in an informal democratic atmosphere, but the practice in constructive cooperative living would itself enhance the probability that the pupil would continue to behave that way.

Teachers differ markedly in the degree to which they try to direct or dominate pupil behavior or build around pupil inquiries and suggestions. A study of several second- and third-grade teachers shows the effect on pupil behavior of these differences in teaching method (44). When teacher and pupil behavior in the same class was compared, the observer found that when the teacher frequently tried to coordinate her plans to the expressed ideas of her pupils and so direct their activities toward her goals, the pupils showed high frequencies of such socially integrative behavior and of expressions of spontaneity and initiative. They also found evidence that dominative behavior led to dominative behavior in response. As these two groups of children progressed through the second and third grades, the patterns of behavior present one year changed significantly as the children worked with a different teacher in the third grade. And these changes were consistent with the differences between the second- and third-grade teachers.

A final example of the ways in which what teachers do affects the nature of students' responses is provided by a comparison of teacher and pupil behavior in traditional and experimental schools. Chart 68 shows that teachers in the traditional schools emphasized making assignments and asking questions; apparently as a result the pupils showed little initiative and tended simply to memorize their lessons. The experimental schools, on the other hand, were characterized by teacher effort to orient and by student initiative. As reported in Chapter XI, these two sets of communities were equal except for the type of schooling, and the experimental schools were much more effective in bringing about desirable learning (62).

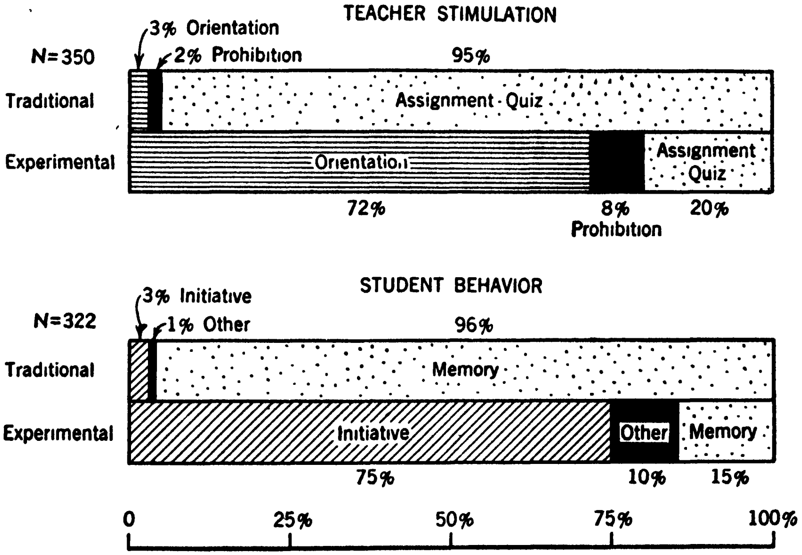

Chart 68.—Differences in kinds of observed behavior of pupils and teacher in traditional and experimental child-centered elementary schools. (From Wrightstone [62].)

Thus an atmosphere of socialization, democracy, and cooperative planning seems most conducive to undistracted and effective work by pupils. The manner of applying these findings, however, must be adjusted to the degree of development of the children. That is, children in the first grade can at best handle only simple projects in small groups with much guidance. It is the writers' belief that further study of the social dynamics of the classroom may be one of the most fruitful sources of improvement of teaching procedures. Certainly one other aspect to be studied should be the effect of group morale on learning. School spirit adds greatly to the motivation of school teams in learning new formations, and of school groups in completing community projects (9). An increase in "we feeling" and a common purpose in a class should also improve learning.

The Effect of Social Structure Within the Classroom.—The teacher's position in the classroom gives her certain prestige advantages and also tends to exclude her from other relationships; she cannot be just one of the group no matter how informal the classroom circle is. Thus, in a study of 53 teachers and 1200 students it was found that after studying a semester under a teacher the pupils' attitudes tended to change in the direction of the teacher's social liberalism or conservatism (36). But in another situation, a Hi Y club for 14-year-olds, the adult leader was unable to get an isolate accepted by the other members, but a boy leader was successful with a matched isolate (26). The teacher's more or less "inherent" position in interpersonal contacts is shown by an analysis of teacher and pupil behavior in several kindergarten groups (2). It was found that teacher-child relationships were predominantly dominative rather than integrative (2 to 1), whereas between children the relationship was reversed (only once less than 1 to 10); and this situation was much less formal than the average classroom. Even in high school where the difference between the teacher and pupils in size and age is smaller, the teacher cannot and should not try to be "one of the crowd." Thus it appears that the teacher must provide leadership but also be as integrative as possible; she must be friendly, cooperative, and understanding but not try to break into the child group.

Among the children themselves there are dynamic relationships of acceptability and unacceptability which affect their schoolwork. As was brought out in Chapter VI, children form groups and cliques and are constantly striving to achieve status in their own group. A study (32) of over 500 children in Grades 4 to 8 showed that those chosen most often by other children to carry out a suggested list of school activities, such as work with a newspaper, act in a play, move to another classroom, etc., tended to be little if any more intelligent but were better students than those who were unpopular. Eighty-five per cent of the problem cases in the classroom as picked by their teachers had below-average popularity scores with their fellow students. There is a circular relationship among these variables as to cause and effect; the teacher has to consider a pupil's group status in working with him on school lessons and the improvement of his group status is itself a teaching goal.

One other effect of group membership is of importance here. It has been found that students who feel that they belong to an organized group resist the effects of frustration better than those who feel isolated. In one study, organized (college teams) and unorganized (relatively unacquainted) groups worked as groups on certain very difficult problems, i.e., moving disks of different sizes from one place to another without getting a larger one on top of a smaller one. The team members persisted longer and worked together better during continued failure than the unacquainted groups (17). In another study pre-school children who were close friends tended to play together more constructively in a frustrating situation than children who were weak friends. Constructiveness of their activity was rated as they played alone or together and as they played freely or when distracted by nicer toys nearby. As noted in an earlier chapter, the constructiveness of play goes down under distraction but does so less with strong than with weak friends (61). An interesting side light from this investigation is the finding that social play is more constructive than solitary play. Would it also be found that socialized classroom work on worth-while topics is more constructive than individual work?

In trying to help the social isolate, the teacher must recognize the facts of existing child group organization; she cannot organize groups as though the pupils were equal pawns. Thus, a teacher may wish to teach a child to be a leader or to help others overcome shy isolation, but various studies show that mutual attractions among children are highly structured. If an isolate is placed in a group of persons whom he likes but who themselves are very friendly with each other, little benefit is gained (25). The problem of helping the isolate is difficult; the social group must be such that social acceptance can take place; it must not be too highly structured in the beginning.

Difference in ability to socialize at different age levels must be taken into account in socializing classroom work. Investigators have found that the natural size of play groups increases with age and that to exceed this tends to be disruptive of the cooperativeness of their play (51). Other studies show that the characteristics of the group members determine how effectively they work together. Thus in a study of small group discussions (four college students) of current controversial issues, it was found that the brightest and best students were the most influential. A study was also made as to the type of person most apt to have a persistent influence—i.e., over several days—on judgments made after discussion. The type of individual most apt to continue influencing students' judgments was a person liked by others (52). In still another study the cooperativeness of groups in various situations was rated and the factors related to cooperation were analyzed. It was found that homogeneity of intelligence was more highly related to the presence of cooperation than was the amount of intelligence (34). If the teacher will use such principles in planning group activities, she will obtain more effective group work; by selecting committee members so that the probable leader has the points of view she desires, she may lead democratic committees to end with the "right" conclusions.

The Effect of Differences in Teacher Techniques of Social Control. —A socialized classroom situation should not be allowed simply to wander where the students will, with the teacher only policing their activities. A simple motto of "live and learn" is not here applicable. The teacher will be much more effective if, while allowing discussion and socialization, she directs the pupils' activities through suggestions of problems not being faced, of resources, and of more fruitful pursuits. In a socialized classroom situation, she is not merely a referee but an unobtrusive friendly guide. Not only must she promote a desire to learn and provide stimulating situations, she must also assist the pupil to find essential points and guard him against the errors which research has shown will probably occur.

In thus assisting pupils, how much and what type of guidance is most effective? The answer to this question will vary from field to field and also from individual to individual. The general conclusions from studies on this question are that guidance during the early trials is more effective than later, although from the first some actual trying to do the job should be mixed in with listening to the explanation. Occasionally too much guidance or poor timing of it may cause more harm than good, as will also demonstrations which do no more than impress the observer with the dexterity of the teacher (12). In brief, guidance should not foster dependence on the teacher and it should give the pupil an understanding of the total problem and of ways to correct specific errors.

Such guidance also includes the suggesting of devices or "crutches" to assist students in remembering and carrying out certain steps. Thus in subtraction when it is necessary to "borrow 1" from an adjacent number, that number is crossed out and its remaining value is marked in. Some educators have worried lest difficulty occur later in throwing away the crutch, so that highest efficiency could not be obtained, as in finger counting in addition. However, one excellent study in arithmetic (5) has shown that the use of certain crutches in at least four different situations was not in any sense a hindrance and during certain stages of learning was of definite aid.

Does the form of a teacher's request make any difference in the way pupils will react? In one study each of 84 children, divided into two matched groups, was observed in some 75 different situations with the teacher (27). In each situation the teacher tried a different pair of contrasting methods of pupil control, the members of Group 1 being treated one way and the members of Group 2 the other way. Thus the members of Group 1 were given directions which were positive, simple, specific, direct, pleasant, hopeful, approving, or unhurried; the members of Group 2 received directions which were general, permitted choice, were verbose, depriving, disapproving, hurried, negative, threatening, or scolding. Chart 69, which summarizes the results of this experiment, shows that practically all of the differences are significantly in favor of the first group. The first two sets of bars show the average percentage of the two groups complying with all requests and all prohibitions. The next part of the chart indicates superiority of the first type of teacher comments in obtaining pupil compliance in various situations—in carrying out well-known acts, in problem solving, and in inhibitions. The last set of bars summarizes the cumulative effect of the techniques used on "group morale." For instance, the observations summarized in this last pair of bars show that Group

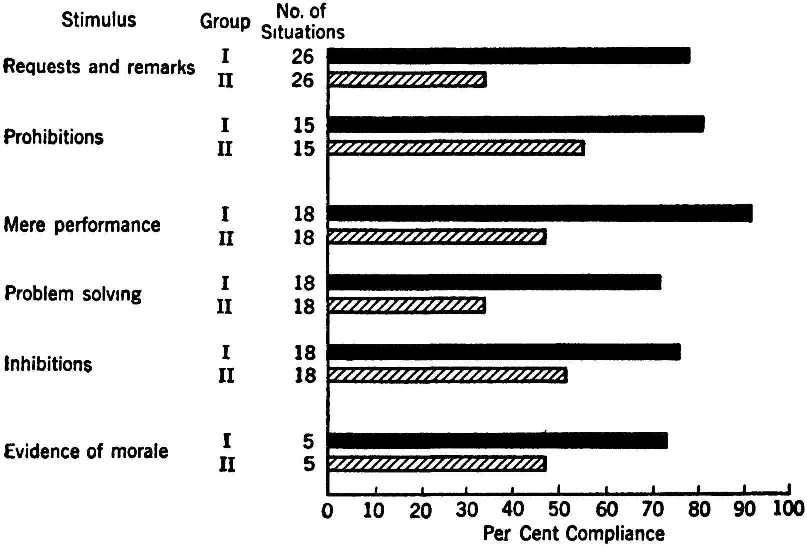

CHART 69.—The differential effects of two types of teacher remarks on the compliance behavior of two matched groups. (Adapted from Johnson [27].)

1 children stayed to play longer after the test period and were more willing to keep on doing something at the teacher's request. Observations after a week found the differences between the two groups still persisting in free play.

In another study, 30 teachers-in-training taught in rotation the same children in three classes (Grades 1, 3, and 5), and the behavior of both the teachers and the pupils was recorded (39). Mere *amount* of talking and other activity on the part of the teacher was found to be unrelated to teaching success ($r = .06$), but the amount of *positive* and constructive statements was positively related ($r = .59$) and the extent of the use of blanket statements to the whole class was negatively related ($r = -.62$). Briefly, then, this and other studies show that teachers' comments should be directive and constructive and not inhibitory; statements should be made directly to individuals rather than as blanket remarks; and what a pupil is to do should be specifically indicated rather than left indefinite.

Chart 70 summarizes encouraging evidence that even older and ineffective teachers may improve their methods of handling groups of children. In this investigation three pairs of experienced but poor "group leaders" teaching children on W.P.A. projects were matched as to background and techniques used. The leadership activities of all six were initially characterized by direct control of child behavior through commands and autocratic methods; thus each child was told exactly what to do, and if he made suggestions the leader responded directly with his own ideas. Each child worked by himself most of the time; the few groups which did occur were small and did not last long. The morale of all the leaders was very low. Three of the leaders were then given three weeks' training in which democratic leadership was discussed and demonstrated. The behavior of all the teachers and pupils was observed again. Marked differences were now found between the leaders given the training and the others with whom they had been paired as equal at the beginning. The trained teachers now tended to encourage suggestions from the children and praised those they considered best, whereas the untrained teachers and their pupils behaved much the same as before. The children under the trained leaders worked in larger groups, wished to continue their group, and carried on extra socially worth-while activities. The morale of these leaders was also markedly improved. That such older, mediocre, or poor leaders can be so much improved is heartening evidence that even older teachers in service may be brought to effective use of modern socialized methods of teaching.

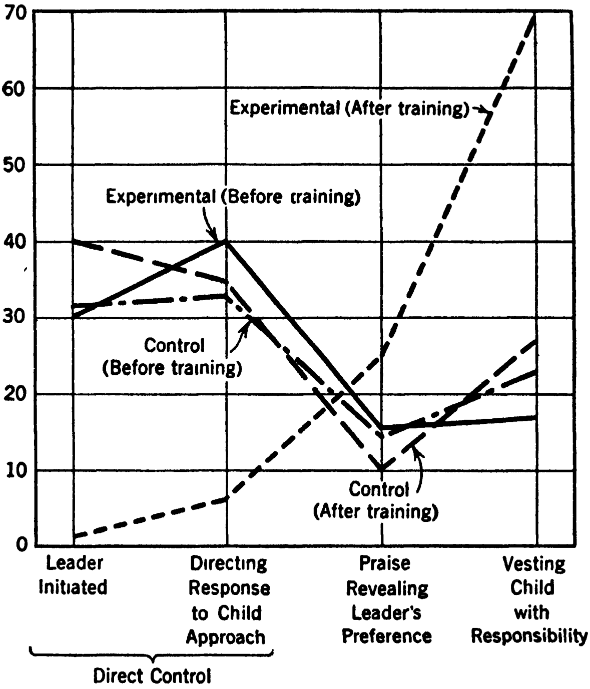

CHART 70.—The relative emphasis on different types of leadership activities used by two small groups of teachers before and after a three-week period during which the group represented by the solid line was trained to use more democratic techniques. (Adapted from Bavelas, in Watson [59].)

Instructional Materials and Learning.—Most instructional material is printed matter. It should be obvious that if this material is not written within the vocabulary range of the pupils they will have difficulty in learning what is there presented. One well-known series of articles on "improving reading ability" dealt entirely with this problem of reading difficulties in instructional material. It was found that if a pupil were to read the books recommended for Grades 4 to 8 in certain courses of study he would have met a vocabulary of 40 to 60 thousand different words, and that most recommended books for fourth-graders were too difficult for two-thirds of the students; typical of the definitions to be found in dictionaries was "a camel is a large Asiatic and African ruminant quadruped" (55). High school textbooks, especially in science and foreign language, have so many new and difficult words that reading is very difficult. As a result of such research, many authors of textbooks and other printed matter for children are paying much more attention than formerly to adjusting the vocabulary burden so that pupils may more easily comprehend.

Teachers of literature have complained that simplification of classics reduces their value, since presumably no paraphraser using a restricted vocabulary can hope even to approximate the effectiveness of the original work of a famous author. But there is some evidence that students not only comprehend the simplified form better but enjoy and appreciate it as much as the original (47). Studies in the chapter on permanence of schooling will show that unfortunate results may often occur if students are made to study "classics" when they are not ready for them. Other studies show that digests and material organized as briefs improve reading comprehension and memory for important points (3, 33).

Reading and discussion should be supplemented by other instructional material where possible. The motion picture has been found to be an effective teaching device. In one school the sixth and ninth grades studied units in general science and geography; for some the units included motion pictures and for others not. The units having movies were learned better, especially when the picture was used in close coordination with the unit to which it was related (24). Still pictures and diagrams are also of value, as are phonograph recordings in foreign-language teaching. Best of all for effective learning is actual experience with the material or situation under consideration. Teachers are more and more taking their pupils out of the school on trips which provide direct contacts with topics under discussion; thus a geology field trip keeps the lessons "down to earth," and visits to local industries permit both direct observation of manufacturing processes and talks with workers. Excursions lasting perhaps a week or more may bring not only knowledge of new places and industries but also acquaintance with economic and social groups hitherto not sympathetically understood. Or for convenience illustrative material may be in one way or another brought to the school. A pupil who has lived in Colorado brings pictures and tells about what he saw and did there. White rats kept at the school and fed different diets demonstrate strikingly the importance of the right food. Dinners for community groups like the Parent-Teacher Association, prepared and served by girls in home economics classes, may be highly educative in social as well as culinary respects—and good public relations also. In short, the more real the material and the problem, the better the learning is likely to be.

A study (45) of the effect of type of play materials on child behavior in the home has some pertinence for the school in this connection. It was found that as the number and proportion of play materials which could be used in various ways and combinations were increased, the amount of imaginative, dramatic, and constructive activity increased and the amount of emotional behavior was reduced.

The Effect of Events and Social Relationships Outside the Classroom.—Children do not sluff off the world as they enter the classroom; home influences are responsible for a large portion of a youngster's personality traits, and the hopes and problems of the day may serve to distract from the work at hand.

The manner in which parents' treatment affects the behavior of their children in pre-school is shown in Table 41 (18). In this study the behavior of the children was rated by three judges and the characteristics of the home by a home visitor. Since such ratings are not very reliable, high correlations are not to be expected; there may actually be

TABLE 41.—Significant Correlations Between Rated Home Characteristics and Rated Pupil Behavior [2]

Home Characteristics	Pupil Behavior										
	Self-Reliance	Responsibility	Resourcefulness	Perseverance	Cooperativeness	Play in Groups	Security	Ascendancy	Sadistic	Selfishness	Nervous Habits
Logical scientific (—illogical)	.57	.49	.52	.45							−.40
Encourage development and expression of ideas (—discourage)	.40		.60	.42	.50						
Foster social development (—inhibit)		.47			.55	.64		.54	−.53	−.44	
Calm happy home (—tension)					.44	.54	.64				−.61
Overprotected (—rejected)	.43					−.54	−.63*[a]	−.53	−.56		.73*

[a] Correlations marked with an asterisk show a curvilinear relationship; i.e., children in homes where they were overprotected or rejected tended to be insecure and have nervous habits more often than children from homes in which they were neither overprotected nor rejected.

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[2] Adapted from (18).

relationships between home characteristics and school behavior other than those shown in the table. But the ones given show clearly that a healthy home atmosphere makes for better school adjustment.

There is some evidence that children's participation and status in games at school are affected by the home in that children whose parents are socially active and take part in public life play in larger groups for a longer time and are more often leaders than is the case with other children. Presumably participation and status in school activities would be similarly influenced (51).

In summary it may, then, be said that the "learning situation" is no simple thing. A good "learning situation" will include suitable equipment—textbooks and other reading matter which the pupils really can understand and use, and various other material in the classroom when needed. But a modern teacher recognizes that the best learning situation is often to be found outside the school; trips to farm or factory or museum are often made. She recognizes even more, however, that the most important features of the learning situation are not physical but psychological. She attempts to make the social atmosphere cooperative and free from conflict and to develop a group spirit of friendly association in working toward a common goal. She recognizes her position of leadership in the group, and the great importance of the ways in which she exercises that leadership. But simply to have a class in which everyone gets along well with everyone else and which the teacher has under affable control, which has good books and other equipment, and which takes interesting trips is not enough. All too often an enthusiastically "progressive" young teacher goes little further than this; if she does not, she has not come to close grips with her job. Her job is to bring it about that her pupils not only are happy but also learn. How may she do that?

THE DIFFERENTIATION AND ESTABLISHMENT OF RIGHT RESPONSES

The question is as to how pupils may be brought to find new ideas and skills and understandings and to establish them as part of their ways of doing and thinking. The following points are here of importance.

The Need for Activity for Effective Learning.—In real life, learning is an actual trial of various ways of doing a thing; it is a dynamic process. And it is by such trial that the learner finds the significance of what he is learning, proves its worth, and makes it his own. If he merely reads about or listens to the expounding of a matter, it remains something apart from his experience. Any form of activity toward the work in hand, any projecting of the pupil's efforts into that work will result in a higher degree of learning than is achieved by the youngster who merely sits quietly, passively "drinking in" what the teacher or the textbook says.

The principle works out in any number of ways. The child who goes to market for his mother learns to make change faster than the one who only does arithmetic problems in school. The boy who tinkers with a radio set learns more about electricity than if he simply reads what the physics text says on the subject. The child who writes thoughtfully, three or four times, the word he has misspelled is much more likely to learn it than his neighbor who listens to other children spelling in chorus. The extrovert in the front row who talks continually learns more French than the shy boy in the back seat who recites only rarely. In fact, it was found in one study (6) that number of recitations was more highly related to test grades than was I.Q.

An experiment in using activities to teach elementary psychology shows that large classes (71 students) can thus be handled and that they prefer this to the traditional approach (43). A great variety of simple projects were provided, all calling for experimentation, observation, or application. There were simple experiments in color mixing, memorizing, observation of the family cat, or in the trial of some special method of study. Groups were informal and usually changed in composition with each experiment. Great freedom was allowed; the students could walk about, talk with one another, and stroll out into the hall. To the uninitiated observer the big room would have seemed noisy and disorderly. However, there was exceedingly little irrelevant conversation or disturbance, for any student who tended in this direction was brought up short by the others with whom he was working.[8]

Observation indicated that certain important general values were obtained. The students learned something of orderly and businesslike procedure in experiments. They learned to use readings selectively and critically, and, as emphasized in the preceding section, to cooperate in their work. Unsigned statements at the end of the course showed that 93 per cent considered the course more interesting than a lecture course, 91 per cent believed that they had learned the material covered more thoroughly, and 85 per cent considered the work better adapted to their individual capacities and interests. And 25 per cent more of the students in this class took further courses in psychology than was the case in the other sections of this same course, which were conducted by the lecture method.

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[8] That so large a class could be successful, with such freedom and activity, should be especially noted. If the work is properly organized and a certain class morale initiated, a class can be made to run itself very largely.

Experience is very important in the formation of attitudes. A study of several hundred farmers in Minnesota showed that 84 per cent of those who had had no experience with cooperative marketing were against it in spite of available publications and talks on its value, whereas only 8 per cent of farmers with any experience in such cooperation were against it. It was also found that years of experience along this line had a positive relationship to the degree of belief in such things as pooling of sales products and central control of quantity and quality of products (Zimmerman, cited in (21). Children (10 to 12 years old) in a summer camp who went through one day of participating in a democracy and another day of participating in a dictatorship were more appreciative afterwards of their privileges and took more responsibility in camp activities than before these two days (35).

Courses for the preparation of teachers offer many opportunities for activities fruitful in learning and attitude-forming. Thus in the writers' institution classes in educational psychology learn about the value and preparation of displays, charts, and exhibits by preparing such materials for use in this course and then considering their value there. They begin discussion of tests and examinations by preparing and discussing the comparative merits of questions for the midterm—and from these questions the instructor makes up his examinations. They obtain a practical first acquaintance with standard tests by helping in using these tests in a school and scoring them and preparing a report of the results for the school. Values of activity programs are discussed with reference to the activity program in this course. The college arranges for students to serve as camp counselors or to do similar work during the summer so that they can thus learn more about children and how to deal with them, and find whether they like to work with them. Many students spend the first three weeks of the September following their freshman year as full-time assistants in some school—helping in classrooms and on the playground, talking with teachers and pupils, attending teachers' meetings, and so learning at firsthand by actually doing some of it what the work of the schools is like.[4] Increasingly, both in teacher education and elsewhere, the educative value of work is being recognized.

Not activity alone, but activity which accomplishes something worth while, as in the above examples, is to be desired. Too many laboratory exercises and "projects" are little more than busy-work; usually the students sense the uselessness of what they are doing, do it perfunctorily, and learn in the same fashion. But if something worth while clearly is being done, then not only is the doing better, the learning is also. And something worth while is accomplished. A teacher should not be ashamed to have pupils help her to do worth-while things in school or community. If the undertakings are wisely chosen as to their educative value and reasonable as to the time and effort needed, she is not "exploiting" her students but using the best of educational methods. It should also be stressed that such projects provide the best of opportunities for developing desirable situations for learning. Cooperative work with the instructor on an undertaking which all recognize as worth while (in which perhaps the community also has an interest) fosters the growth of desirable social climate and group structure.[5]

Though genuine undertakings such as described above are to be preferred, even activity of an academic and verbal character is of value, as was mentioned at the beginning of this section. Thus pupils learn better if they frequently close their book and try to recall what they are studying rather than simply read it over time and time again. A teacher should always try to find things that pupils can *do* in connection with their learning, even if what they do is relatively academic and formal in nature.

In short, a genuine undertaking—an activity program which has reality in it—provides the best means for differentiating and establishing right responses; the right response is the one that works. Even such an anemic activity and self-check as recitation to oneself is better than none.

An important supplement and qualification to the above statement must at once be added, however. If the doing is clearly superfluous, it may burden and even interfere with learning. Thus when large matched groups of fifth-graders were asked to learn material by one of several methods, the one which required the writing out of answers to problems was less effective than other methods which did not demand laboriously written compositions (4). In many instances a demonstration method has been found to be as effective as individual manipulation during a laboratory period (28). Much can actually be gained in science laboratories, for instance, by providing students with mimeographed drawings in which they are merely to label the parts observed in the microscope field. Laboratory work is usually helpful by making concepts concrete, but unless the teacher is careful, much busy-work may be added only to make laboratory work poorly liked.

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[4] Arthur J. Klein (ed.), *Adventures in the Reconstruction of Education,* Ohio State University, 1940, 290 pp.

[5] A summary of informal experiments along these lines in classes in educational psychology will be found in S. L. Pressey, Social and useful college classes, *Sch. & Soc.,* 1942, *55,* 117–120, and The class as a psycho-sociological unit, *J. Psychol.,* 1943, *16,* 13–19.

The Importance of Successes.—Learning feeds upon successes. The section on motives and incentives in the preceding chapter emphasized that success experiences are exceedingly important for the maintenance of interest and the furthering of effective work upon a problem. The chapter on emotional life was a long development of the theme that continued failure is the greatest hazard to mental efficiency and mental health, whereas success is a stimulus and aid to effectiveness. A major function of the guidance program of a school should be to see that pupils do not attempt work in which they cannot succeed, and the major function of a teacher is to bring it about that her pupils are successful. In an experiment (56) in which short and not too interesting tasks were worked upon for fifty minutes or more, it was found that frequent failure caused irritation and loss of interest but that the students could force themselves to keep at the work. However, when comparable tasks were inserted into easy and into hard series, success was higher in the easy series. Learning was reduced as much as one-eighth under the condition of frequent frustration.

Here a very common and very unfortunate misconception indeed must be dealt with. Most people think that to tell a pupil when he has done something wrong or to mark the errors on his papers will tend to the elimination of those wrong acts or mistakes. Certainly (it is commonly believed) punishment will so operate. The actual evidence, however, shows that such warning or penalty may cause the repetition of these errors! Table 42 summarizes four experiments in which different types of material were learned; errors were indicated sometimes simply by telling the learner that he was wrong, and at other times by giving him one or more electric shocks or imposing a small fine. Right responses were indicated by telling him that he was right. It is obvious from this table that such specific warnings or punishments did not reduce but instead increased the frequency of wrong responses. In fact, it was found that if a "wrong" response occurred three times in succession and was punished each time, the probability of its occurring on the fourth trial was greater than the first! Apparently, to designate a response as wrong or penalize it calls attention to it, and thus it is more likely to be made again.

TABLE 42.—The Percentage of Recurrence of a Response *in Excess of Chance* After Punishment of Varying Degrees, and After Reward[6]

	Code Learning		Six-Part Picture	
	Money	Shock	Money	Shock
"Wrong"+No shock or loss	13%	11%	8%	6%
"Wrong"+1 shock or loss of .1¢	14%	9%	5%	4%
"Wrong"+2 shocks or loss of .2¢	13%	11%	8%	6%
"Wrong"+3 shocks or loss of .3¢	11%	11%	7%	5%
"Wrong"+4 shocks or loss of 4¢	9%	7%	6%	5%
"Right"	28%	27%	12%	10%
Number of responses at least	1000	1000	1800	3000

The table also shows that to designate what the learner has done as "right" is the most effective way to cause him to do that thing again. Apparently when error-marking or punishment has led to improvement in learning the important factor has been that the learner realized at once what the correct response was. The exceedingly important practical conclusion, then, is that error-marking and criticism by themselves are worse than futile and are justifiable only as one step in turning from the wrong to the right. A teacher should always be very sure that criticisms and penalties are accompanied by indications as to what should have been done, and are followed by successful doing of the desired act.

Over and above the immediate and specific effects upon learning, the larger outcomes of success and failure must never be forgotten. "Of the numerous roles which the classroom teacher plays, that of dispenser of success and failure is undoubtedly the most impressive and worrisome to the pupils, and one of the most crucial for their present and future adjustment."[7] The matter has been dealt with at length earlier in this volume but can hardly be stressed too much.

The Importance of Knowledge of the Goal and of Progress.—The aimlessness of many high school and college students is a matter of lasting wonderment to the writers. Many of them have no vocational or educational aim; they go to school because it seems the thing to do. If a course is required they take it without thought as to why—as to its value or lack of worth for them. Their reason for taking an elective may be nothing more than the convenience of the hour or the desire to be with a friend. Such purposelessness is bound to make the work inane, flat, and perfunctory. On the other hand, the section on motivation in the preceding chapter showed that definiteness of goals has a positive effect on learning. It remains here to emphasize that if subject matter is so organized that there are definite and recognized things to be done or portions of work to be accomplished, greater gains will be made.

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[6] From Tuckman's data in *Teach. Coll. Contrib. Educ.*, No. 590, 1933, 45 pp.

[7] R. G. Barker, Success and failure in the classroom, *Prog. Educ.*, 1942, *19*, 221–224.

Information as to progress has a definite effect on efficiency in learning. The learner needs such information so that he can verify the correctness of what he has done and check for errors. Thus in a study of progress in learning to shoot at a distant target, it was found that no learning took place without knowledge of results. And if in further practice knowledge of results was withheld after the person had learned to shoot accurately, *his performance deteriorated* (15). In another investigation two groups of fourth-grade pupils worked on a series of drill units in arithmetic (40). One group was provided with individual and class progress charts; the other worked without any such material. The two groups began with similar scores, but the one using the progress charts gained distinctly more than the other.

Knowledge of progress not only assists learning by making goals more definite and providing measures of success and failure in attempts to learn, but it also acts as a motivating device. A combination of curiosity and desire to have objective verifications of self-esteem makes a student interested in knowing just how good he is. Thus he quickly fills out test items which purport to measure his degree of adjustment, social intelligence, sense of humor, etc. Often as a slave to self-esteem, a student will work hard just to raise the line on a graph. Graphic methods for presenting progress (and also for indicating the goal, where this is possible) are of demonstrable value. Charts 71 and 72 are of interest in this connection. They present two simple and vivid schemes for showing goal and progress in handwriting.

Here again a very common misconception must be corrected. Practice does *not,* by itself, make perfect. It may even—as in the experiment on shooting at a target mentioned above—bring poorer and poorer work. If there is intent to learn *and* understanding of what is wanted, succeeding trial performances are really much more than simply repe-

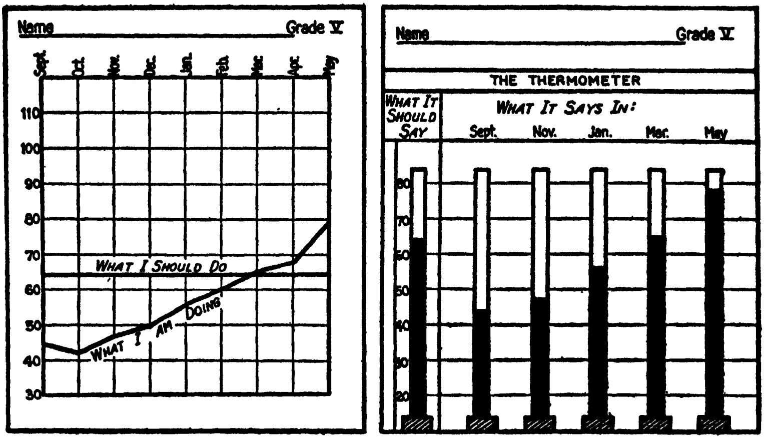

Chart 71.—Two types of chart for recording progress in handwriting. (Paulu, *Diagnostic Testing and Remedial Teaching*. Reprinted by special permission of D. C. Heath and Company.)

tition; they are also repeated opportunities to find out if this or that try is correct and to obtain the satisfaction of any successes which may be made. If there is repetition without the effort to learn (as in repeated dialing of a phone number which has been conveniently posted beside the instrument) or if there is no knowledge of correct answer or progress (as with a student whose papers are never returned), there is little or no learning with mere repetition (54). Thus simply asking a child to write a misspelled word correctly ten times will do little to assure that he will spell it correctly in the future.

The small value of routine practice has been strikingly shown in certain of the "skill subjects." In one study the handwriting of several thousand children who had had extensive formal practice in writing was compared with that of several thousand other children from similar schools who had had little formal training in handwriting because they had spent much of their "handwriting period" in typing. The top of Chart 72 shows the comparative amounts of formal practice in the two groups; the curves below give the improvement in handwriting quality and speed during the first five grades. It is obvious that the extensive formalized practice did not result in any better handwriting. In teaching arithmetic through the use of such activity units as making ink and running a school bank, it has been found that many arithmetic processes are not frequently used (38) but are learned nevertheless. And arithmetic is better learned through such activities than by formalized drill (96 per cent vs. 67 per cent) (20).

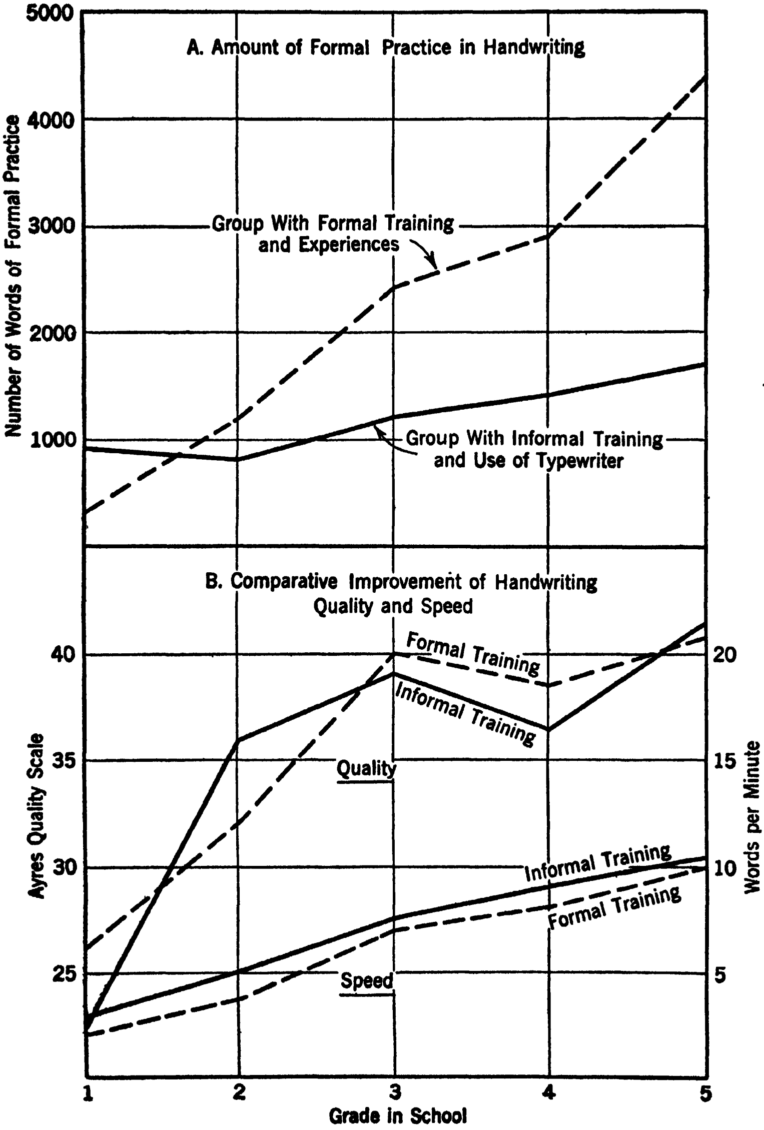

Chart 72.—The inefficiency of formal practice in handwriting. A, Difference in amount of formal practice; B, comparative increases in speed and quality. (Adapted from Wood and Freeman [60].)

It is necessary to provide the student not only with knowledge of progress so that he may better direct his learning, but also with information as to his own and the world's nature so that he may sense his shortcomings and thus be motivated to learn. Self-estimates of needs and abilities tend to be quite general, to err on the good side, and to overemphasize certain characteristics. For instance, most students' descriptions of their study difficulties are limited to complaints of trouble in concentrating and remembering, with little insight as to the causes. Difficulties in such areas as handwriting, grammar, and mathematics are laughingly excused as overall poor skill, whereas actual analysis usually shows that in grammar, for example, a few items such as two or three grammatical rules may cause over half the trouble. In estimating their "cultural development" students tend to overweigh literature and fine arts (50).[8]

Knowledge of status or progress is a necessary step to keeping a student's concept of himself lined up with reality. In light of this profile of abilities, the student is able to set up more definite goals for learning. Some have questioned whether providing correct personal information may not cause emotional upsets. A study (1) shows that even intelligence test scores can be told to students without unfortunate results such as discouragement of those testing low, if sensible and helpful explanations are first made. In fact, in another instance students of low ability who were told their test scores did better in class than did their matched controls who were not told their scores (49). Evaluation of status and progress is so important as a motivating force and as a means of guiding the student in his efforts at improvement that the entire next chapter will be devoted to methods of appraisal of learning.

The Value of Learning Material in Its Context and as It Will Be Used.—Research has repeatedly shown that material is most effectively learned in its context and, so far as possible, as it will be used. Thus if shorthand is taught from the beginning by using sentences as drill material, the results are better than if the pupils are first drilled on isolated words (8). If history is taught backwards, i.e., starting with current news items and tracing back to related events and historical origins, students learn better than if the usual historical chronology is followed (10).

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[8] Illustrative of other errors in self-estimate is the fact that 27 per cent of the students who estimated that their "general culture" and "knowledge of contemporary affairs" were well above the average for college students were actually below average (50). Students whose actual behavior in being punctual in class and returning books was already known were asked to rate themselves on these traits; those who were tardy rated themselves as on time (13). Other studies indicate that students' estimates as to the nature of the world, i.e., average wages in their chosen occupation and return on investments, are typically subject to being 100 per cent or more too high.

One of the writers once came across an example of teaching where there was an almost complete disregard of this principle. When a test was about to be given to some first-grade children near the end of the school year, it was found that they could not yet write their names. The teacher apparently felt some implied criticism, and explained the situation. It seems that she had first drilled the innocent children on the small letters taken in alphabetical order; after polishing off the small "z" she had started through the alphabet again with the capitals and had reached "U." In a couple of weeks more she thought the children would be ready to write their names. These youngsters had labored daily on forms of whose usefulness they had not the slightest notion. Such painful situations are not confined to the elementary school. The first semester of Latin, if confined almost entirely to memorizing conjugations and declensions, is hardly less stupid.

Many textbooks and many teachers are still proceeding on the assumption that the learning of a rule will result in correct usage and application, and that one problem is about as good as another in getting children to think and reason. Neither of these assumptions is true. Moreover, since the school often presents a topic in ways very different from the way it appears in actual life, the former is not reinforced by the latter, and the learning is consequently slower. For example, children gain greater ability to solve problems in arithmetic if the school uses problems telling a story and involving a situation such as the pupil has seen, than they do by working problems which do not really arise or are impractical or even silly.

There is unquestionably doubt as to the value of such a problem as "If a 5-inch nail is driven through a board in such a way as to stick out 1.6 inches on one side and 2.3 on the other, how thick is the board?" As a technique for measuring the thickness of the board it would be hard to devise anything more idiotic. Then there are problems concerning trains that overtake each other; only for train dispatchers would this material seem of use. The practical answer to the following problem: "If a room is 15 feet long and 10 feet wide, what size rug would you buy if you wished to have a space exactly a foot wide all the way around?" is that you would either buy no rug or have one made to order, because stores do not sell rugs 13 by 8. To put the question in the form in which it would most likely apply to a housewife, it should read: "If you had a room 15 ft. x 10 ft., which of the standard size rugs would look best in it?" To take another subject, one would not accost a clerk in a Paris store with the words: "Je veux, tu veux, il veut, nous voulons, vous voulez, ils veulent." No indeed; one would say: "Je veux acheter un chapeau."

Teachers often seem to neglect the fact that children go right on living and learning outside of school hours. If what they do or see others do is related to what they are taught in school, there is more interest, and more rapid learning because of this reinforcement; but if the two experiences are of a different genre, it is not surprising if interest lags and learning is slow. A teacher should try constantly to relate the schoolwork to the pupils' extra-school life, and to get the children to bring out-of-school experiences into the class discussion. This interrelation and application will bring manifold values. Interest is stimulated, the pupils think more about both their schoolwork and their other experiences (they get into the habit of carrying their learning around with them instead of leaving it in their desks at school), and they have the job of contributing to the classwork. Moreover, the work is more interesting to the teacher.

Teachers also neglect the fact that children want to participate in the community right then, and not just prepare for it by practicing mock situations. In the many recorded instances in which school children have undertaken projects of community improvement, worth-while results to community *and* child have resulted. The increased enthusiasm of the students for their work has been further proof of the validity of this approach.

Students at Washington Irving High School in New York City as an assignment looked about a tenement neighborhood for evidence of bad sanitation. They then learned how to write letters of complaint to officials suggesting needed changes; if nothing happened, they wrote follow-up letters. In one case a haphazard garbage collection was changed to a daily round. Another student wrote to the Borough President describing the flooded cellars and lack of sewers in his neighborhood; when a petition form was returned to him, he obtained the signatures of property owners and returned it. Within six weeks work on the district sewer system was in progress. Later the city health officers used the students to distribute and explain pamphlets giving rules and suggestions for public health to parents and storekeepers. At Flomaton, Alabama, the fourth- and sixth-grade pupils wished to beautify their rather unattractive school grounds. They drew a plan to scale, dug up shrubs in the woods, and planted them according to plan (19).[9]

The section may be briefly summarized. If a student is to achieve new ideas and understandings, the school should foster an active, lively search for and trial of such ideas and insights. It should assure and recognize successes, but never stress failures or mistakes. Work should be so organized that the learner is constantly guided and stimulated by recognized progress toward the goal, but never blindly repeats or drills without awareness of goal and progress. What is learned should be real and genuine and, so far as possible, in lifelike context much as it will be used. But with typical perverseness the conventional school ignores all these prerequisites for effective learning. It regards an active social attack upon a problem as disturbing and undesirably out of the tradition of the school as a cloistered quiet place apart. Frequent desire to know why this or that is being done and how one is getting along is not academic good manners. The conventional school draws back from the practical; to have anything to do with a community problem is considered politically dangerous. It appears to prefer the plodder who is willing to drudge stupidly at a daily stint in spite of failure, and to be impatient of the alert youngster who is eager for success, interested in his progress, and looking forward to specific accomplishments. If a teacher will only provide schoolroom situations which are favorable for learning, half her problems will take care of themselves.

CLARIFICATION OF THE TEACHER'S TASK

In all work, methods for analyzing a problem and locating key difficulties are of great help. To teach pupils effective methods for attacking a problem is in many respects the most important part of a teacher's work. Certain of these methods, which are of great general usefulness both in school and out, are so important that they are reserved for treatment in a later chapter. Here certain ones by which the teacher may attack *her* problem—helping her pupils most effectively—will be dealt with.

The Importance of the Recognition of Individual Differences.—One of the writers recently gave a class in educational psychology an examination consisting of seven general or "essay-type" questions. The answers to each question were graded on a scale of 10. The class showed variations from 0 to 10 on each question, and the percentages of acceptable answers (8 or above) on each question were 72, 59, 81, 42, 68, 75, 84. There was no topic adequately understood by everyone, and none on which no one did well. Any further teaching which assumed adequate knowledge of the material covered would not have been appropriate to 28 per cent of the class; and a complete review, on the assumption that many in the class knew nothing of this topic, would presumably have been a gross waste of time for almost all the students. Such a situation is so universal that it is taken for granted, but it exemplifies one of the most difficult and baffling of all educational problems. Ways must be found to adjust somehow to individual differences and still keep the advantages and economies of class instruction.

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[9] The student will find that references (7, 9, and 19) contain fascinating accounts of how other schools have participated in community enterprises. Hundreds of schools have carried out such projects.

The problem is set forth still more clearly in Table 43, showing the results with objective tests for a large class in educational psychology taught in several sections. The pre-test was an extensive objective examination, covering the entire course, and given at the beginning of the quarter to see how much the students knew of the content of the course *before taking it.* The third and fourth distributions show the results with a similar extensive objective examination at the end of the course. Here the control group represents the type of findings which would be expected in the average class. It will be noticed that even before taking the course one student scored as high as 210, while others scored no more than 30. At the end, the control group varied from 120 to 280. Some students scored higher before taking the course than others did at the end of it (53).

A great variety of schemes may be used to adjust to such differences. In the experimental sections of the class mentioned above the following procedure was used: The class met five days a week, and each Thursday, during the last twenty minutes of the period, a brief objective test was given on the week's work. The next day the papers were discussed briefly and all those who made A or B were told that they need not come to class on Monday. The first thirty minutes of the Monday period were devoted to a rapid review of the previous week's work, and during the last twenty minutes a second test on that work was given; the final grade of these students for that week's work was the average of the Thursday and Monday quizzes. This procedure informed each student each Thursday as to how he was doing; and if he was not doing well, the quiz gave him some information as to where he was weak. The "make-up" test on Monday gave him a motive for reviewing on the basis of this information, and the first half of the Monday hour was an opportunity for him to obtain help

Table 43.—Results of a Teaching Experiment in a Course in Educational Psychology; Distributions of the Pre- and End-Test Scores for the Experimental and Control Sections (53)

	Pre-Test			End-Test		
	Exp.	Con.		Exp.	Con.	
Score	f	f		f	f	
280–289				2		
270–279				2	2	
260–269				5	5	
250–259				6	6	(90 percentile)
240–249				8	10	
230–239				16	13	
220–229				13	10	(Med.)
210–219		1		11	7	
200–209				7	9	
190–199	1			5	8	
180–189	1				6	
170–179	2	2		1	4	(10 percentile)
160–169	3	2			3	
150–159	3	10	(90 percentile)		1	
140–149	2	4			2	
130–139	6	10			1	
120–129	17	15	(Med.)		1	
110–119	11	9				
100–109	9	8				
90– 99	3	8				
80– 89	7	9				
70– 79	6	4	(10 percentile)			
60– 69	3	4				
50– 59						
40– 49	1					
30– 39	1	2				
Total	76	88		76	88	

	Pre-Test		End-Test	
	Exp.	Con.	Exp.	Con.
90 percentile	158	156	263	257
Median	117	120	231	222
10 percentile	74	77	202	172

on the review from the instructor. The last distribution, the end-test results for the experimental sections, shows the effect of the scheme. Most noticeable is the lifting of the lower end of the distribution—the poor students were very evidently helped. However, even the good students in the experimental section, with fewer days in class, did better work than the good students in the control sections.

Practically without exception, experiments have shown individualization of instruction to result in better work. For instance, an elementary school arithmetic class of 21 pupils whose work was completely individualized increased their mastery of the skills covered nearly 50 per cent over that of 21 other children of the same age, grade, intelligence, and initial knowledge of arithmetic who spent the same amount of time on the subject but were taught by purely group methods. The importance of adjusting to individual differences was essentially the theme of the entire preceding chapter. It will be remembered that that discussion closed with a description of the improved teaching resulting in one school system in which the teachers were helped in understanding each child as an individual.

TABLE 44.—Student Acquaintance in a Typical University Class of 33 Students as Shown by Number of His Classmates Each Student Knew by Name. The First Column ShowsAcquaintance at Beginning of Course. The Next Column Shows Acquaintance at End of (1) a Conventional Course Conducted in Formal Fashion, (2) a Course Conducted in an Informal Manner, and (3) a Course Conducted for Two Quarters in a Socialized Fashion

Number Known	Beginning		End	
		Conventional	Informal	Socialized
32–33				1
30–31				1
28–30				5
26–27				6
24–25				5
22–23				4
20–21			1	3
18–19			2	2
16–17			3	1
14–15			3	1
12–13			4	1
10–11		1	6	1
8–9	2	4	5	1
6–7	3	6	4	1
4–5	5	12	3	
2–3	12	8	1	
0–1	11	2	1	
Median	3	5	11	25

But a modern school is not concerned simply with arithmetic and history and chemistry; it considers also its pupils' attitudes and acquaintanceship and experience in work. Here also individual differences are great. To bring the matter close home to the reader, a sample class in educational psychology may be taken as an example. In that class of 30, one smug and prosperous girl was a narrow-minded little fascist who thought all labor leaders dangerous radicals; another girl helped in the picket line during a local strike. One girl had never been out of her home state, but another had spent a year in Europe. Six had never earned a penny, but one had held a full-time job in a hospital kitchen for two years and eight were earning all their expenses. As for social adjustment—Table 44 shows how students may differ in acquaintance with their classmates at the beginning and end of a quarter, and also how different classes may vary in the extent to which they foster acquaintance.

The Importance of Educational Diagnosis.—As suggested by the above example, study of the work of the individual pupil leads naturally to diagnosis. That is, it leads to the attempt to find just what is wrong with each pupil's work and set him right. Here the teacher finally comes in direct and immediate contact with the specific learning problem.

A concrete example will make clear how much can be done once diagnosis has been made, and how ineffectual practice is without diagnosis. A certain college freshman was having great difficulty with her English composition and was finally sent to a special laboratory course for failing students to see whether something might be done for her there. In the laboratory the first step was to obtain a number of the papers which the student had written for the course in freshman English. These papers were all graded D or E, with comments in the margin such as "very poorly expressed," "poor sentence structure," "awkward," "incoherent." These comments left the student completely bewildered as to what she should do in order to improve her work. A careful analysis of her writing was therefore made to find more specifically just what her trouble might be. This showed that about two-thirds of her mistakes were due to a vagueness in pronoun reference; for example, she would write, "A girl at college makes many friends which is good for them." A majority of the remaining errors were due to her failure to put corresponding ideas into a corresponding construction; thus she wrote, "The object of this course is diagnosing students, to give them help in their studies, and so as to to get them off probation." Hence attention was directed specifically and solely to these two errors. The girl was told to go over each composition she wrote and check all the pronouns, then to go back through the paper and be sure that each pronoun had a definite, specific antecedent. She was also told to go through her sentences and locate all the ideas that were parallel, then see to it that these ideas were expressed by parallel structure. She was given exercises consisting of sample wrong sentences in which these two types of errors appeared; she reconstructed these sentences as best she could and then turned to a key which showed her how they should be rephrased. With persistent practice on these two difficulties about 90 per cent of her errors in English vanished. A curious fact about this girl's troubles was that she thought she made innumerable types of errors because her papers were returned to her with so many red marks and such diverse comments. But never, throughout her grade school and high school career, had the specific nature of her two common errors been discovered.

TABLE 45.—Scores on Duplicate Forms of the Same Arithmetic Test Before and After Six Weeks of Diagnostic Teaching[10]

Pupil	I.Q.	C.A.	Problems Right Before Training	Problems Right After Training	Gain in Years
No 1	86	10–4	11	22	2½
No. 2	102	9–4	10	19	2
No. 3	122	9–6	15	20	1¼
No. 4	141	7–0	6	9	1⅓

The evidence of educational experiment is universally in favor of the diagnostic attack upon teaching problems. For instance, analysis of error, and remedial work based on the analysis, were found to improve greatly the mastery of algebra (58). A similar technique brought about unusual gains in spelling (64). In another experiment individualization and diagnosis caused great improvement, as shown by actual performance, in the mastery of vocational agriculture (46). Finally may be mentioned results with four individual pupils whose gains in arithmetic over a six-week period of personal attention and diagnosis of error are shown in Table 45. These children gained in six weeks (using only the usual amount of class time) as much as is ordinarily gained in from 1½ to 2½ years, as shown by norms based on work done under usual school conditions.

Again it must be remembered that a modern school is not concerned solely with the learning of arithmetic or spelling or composition. Diagnosis is possible in connection with more modern objectives. The class in educational psycnology mentioned a few pages back may be taken as an example. Study of the data about the smug fascist showed that she had never had any acquaintance outside of her own social set. The girl who helped the strikers was a Russian refugee whose hardships had made her acutely conscious of the problems of others. The instructor had the two girls work together at the same table, with some benefit to both. And at the end of the first month each student in the class was asked to write a "thumbnail sketch" about each other student he knew. Mention of the offensive noisiness of one, the untidiness in dress of another, the willingness of a third to help gave cues of distinct value in diagnosing their social personalities.

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[10] W. A. Brownell, Remedial cases in arithmetic, *Peabody J. Educ.*, 1927, 7, 100–107.

Effective teaching thus requires the recognition of the individual pupil, and the study of the individual pupil leads to the investigation of his specific difficulties, or to educational diagnosis. To be a good diagnostician requires that the teacher be informed about educational ills and be equipped with instruments for diagnosis. These instruments will be dealt with in the chapter on the appraisal and direction of learning. Here it remains to bring out the importance of such knowledge of research findings as will give a teacher skill and judgment in the diagnosis of educational problems and the guidance of learning.

The Utilization of the Results of Research.—In general, it may be said that research information is needed on the importance of topics, their difficulty, and the causes of error; the more specific such information is, the better. With reference to the first two points, Table 46, summarizing two investigations in English composition, is of interest. The first three columns show the frequency with which capitals are used for various purposes in magazines, newspapers, and business letters. Here stand out the frequency of capitals at the beginning of sentences and in the names of persons and places; their use in commercial trade names in business letters is also prominent. The second four columns, showing error, make clear that certain common usages are well known by secondary pupils and that others are not. Thus because of problems of sentence structure issues of the capitalization of the beginning of a sentence continue throughout. Names of persons give no trouble, nor does the capitalization of the pronoun *I*. In the seventh and eighth grades there is considerable trouble with the capital at the beginning of a quotation and the capitalization of titles of books or articles.

Even in the simple topic of capitalization such data are useful in suggesting to the teacher what is important and where to look for trouble, and they are even more helpful for more extensive topics. Studies of arithmetic processes have shown what steps must be learned and which ones cause the most difficulty (29). In spelling, counts of the frequency with which different words are used in letters

Table 46.—Frequency of Use of Capitals, and of Mistakes in Capitalization [11]

Use	Use of Capitals per 10,000 Words in				Mistakes in Capitalization per 10,000 Words in Grades			
	Magazines	Newspapers	Letters	Average	VII–VIII	IX–X	XI–XII	Average
Beginning of sentence	400	345	358	368	41	26	15	27
Beginning of quotation	42	10	5	19	13	4	0	6
Name of person	118	134	42	98	1			
Initials	3	16	36	18				
Title with name	48	118	35	67	2			1
Title as proper name	11	3	7	7				
Name of place	107	215	47	123	6	4	2	4
Nationality, race, language	41	55		32			1	
Name of organization	46	56	81	61	1	3	4	3
Title of book, heading	33	6	7	15	11	10	2	8
Commercial trade name	1	5	121	42	2	1		1
Date	17	41	61	40	2	2	1	2
Reference to deity, government	36	37	2	25				
I	65	2	65	44				
Miscellaneous	14	7	34	18	10	16	13	13
Total	982	1050	901	977	89	66	38	65

and other writing have shown that only some 3000 words are common enough to be considered essential, and studies of spelling errors have resulted in lists of "spelling demons" (16). Frequency counts for foreign languages have located the words most often met in reading (lists of "reading demons" are much needed). In technical vocabularies it has been found that though a book in English composition, for example, may include 200-odd technical words and phrases in grammar, only about 30 are of major importance. Studies have been made of the background information and skill necessary for high school and college courses—the grammar needed for foreign-language study, the elements of arithmetic and algebra frequently used in science, the geography needed in history, and so on. Further investigation has been made to determine what elements of this essential background college freshmen frequently do not know; the resulting lists are of great service in helping to locate the causes of a student's difficulties in college. The above illustrations deal with elements of information and skill. But research should also aim to locate essential insight and understanding and specific "key difficulties" in thinking. Such data would be of great value to a teacher in her efforts to "train pupils to think."

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[11] S. L. Pressey, A statistical study of usage and of children's errors in capitalization, *Eng. J.*, 1924, *13*, 727–732.

A teacher should also be familiar with research on the causes of error. If she teaches arithmetic she should know that children may be slow or inaccurate in adding because they count instead of learning the combinations. She should know that reading may be slow because the pupil whispers to himself what he reads. She should appreciate the confusion in which pupils find themselves in capitalizing because certain words, such as *street, river, captain, professor,* may be capitalized or not, depending on whether they are part of a name. She should know something of the confusion which may arise in children's minds about the meaning of such terms as *democracy* or *justice.* To be a good diagnostician a teacher should know something of the "psychology of the school subjects."[12]

A brief résumé of an experiment in remedial instruction in handwriting well illustrates how a teacher's task may be clarified through the three methods mentioned above (individualization, diagnosis, and utilization of research) (42).

The experimental class consisted of 23 children in Class 4B; the control group was composed of 19 other 4B children in the same school. Both groups were equated as to speed and quality of handwriting on the basis of Ayres Gettysburg Scale at the beginning of the experiment. The handwriting of the two groups was also initially equal in legibility, as shown by the speed with which it could be read.

During the next nine weeks the usual group handwriting instruction was continued with the control group, but intensive analyses were made of the handwriting of the experimental class. The analyses of the first composition written by this class showed 14 different illegibilities to be common. However, by no means did this warrant class instruction on these 14 items. The average number of different illegibilities frequently made by any one pupil was 2; class instruction on the 14 items would thus teach the average pupil 7 times as much as he needed. There was no illegibility common to more than 11 pupils. The total number of different illegibilities on a composition varied from 42 to 0.

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[12] This will, the writers would argue, be even more true in the schools which are reorganized on the basis of an "activity program" than in a conventional school. Despite the shortcomings of the conventional approach to arithmetic, for example, this approach does at least systematically expose the pupils to the desired elements of the subject, and the conventional recitation permits the systematic appraisal of progress. When the learning of arithmetic is incidental to a project, large gaps in the subject or serious faults of method may be overlooked. From time to time a systematic survey of each child's standing and a diagnosis of any difficulties are thus very necessary. One interesting conclusion from all this is that standard tests may be even more needed in a progressive than in a conventional classroom.

Evidently the work needed to be individualized. Each child, therefore, was presented with a card on which were tabulated the specific errors he had made on a sample of writing. To show the practical need for legibility, the teacher sometimes wrote at the bottom of the card such statements as: If you make "d" like "cl" you will write "clown" when you mean "down." Each child practiced the letters he made incorrectly and was given words to copy which involved those letters, and each one also practiced pairs of words (such as "cat"—"cut") which might be confused because of some illegibility he made frequently. Each week they wrote another test, which was analyzed as before. No attention was paid to matters of slant, spacing, or alignment until the last two weeks and then only with such children as needed help.

At the end of the nine weeks, both classes again wrote an exercise and a composition, and these were rated as before. The same judges were able to read 10 more letters per second of the writing done by the experimental group than before, but 3 words less of that done by the control group. In the nine weeks the experimental group gained more in quality of handwriting than the average class does in half a year, while the control group made no gain. In speed (which was never mentioned to the children) the gain of the experimental group was equal to the usual increase of a year and a half, whereas the control group gained about half a year. Evidently the use of research data, the diagnosis, and the individualization were highly profitable educationally.

THE NATURE OF THE LEARNING PROCESS

As an overview and integration of the last three chapters, a brief, straightforward summary regarding the essential nature of the learning process must now be attempted.

In the first place, it must by now be clear that learning is not something apart from development, but something possible only if in accord with and essentially part of development. It is not an impersonal process; it might better be described as a process by which an individual makes some new skill or idea his own because in some way and to some degree it fills a need he feels.

In the second place, it must be evident that learning does not take place in a vacuum. It is an adjustment to an environment, particularly to a social environment. It involves trying in that environment to find a satisfaction for a need—a reaching and groping about to find such satisfactions. To shorten the time of groping and to guide the reaching that it may reach straight is the major task of teaching.

But it should be clear by now that all these considerations regarding the learner and the learning situation and the preliminary maneuvering of the learner in that situation are only preliminary to the final desired outcome: the discovery of a new and better response, and the establishment of that response as part of the way of doing things thereafter. The two final questions are these: What, psychologically, makes a response right? How is it established as the new response to that situation? These two questions are in certain respects too difficult and too technical for systematic debate in this book. But a brief summing up and systematization, in terms of the discussion in the three chapters of which this is the last, may be of value.

How then (first question) do persons who are working on a problem know when they have found the right answer? The answer may be put in terms of the small "field study" anecdote of the girls and their jigsaw puzzle described at the close of the first of these three chapters. The right place to put a block is the place where it fits. In the large, that is true of the entire learner-situation relationship; the solution to a problem is that way of dealing with it which seems to the learner really to fit his abilities and needs in that situation. But the concept of fitting holds more specifically in determining psychologically what makes a particular concept right. In the work on the picture puzzle a right move was a move which put a block in a place where that block tied in with and "made sense" with the whole. The same thing holds in real learning. Suppose that a child is learning the addition table and trying to master the fact that five plus six equals eleven. This is not merely a problem in rote memory as if he were learning to say, parrot-like, *sig* plus *ump* equals *squig*. If he is really learning this combination he is learning it as a recognition of a fact that he now sees to be true, quite as in doing a picture puzzle he saw that a block in the right place fitted into a total coherent picture and built it further. The child learning arithmetic, presumably from counting and from seeing groups of objects and "number pictures" (dots or other units so arranged that the number of them can be readily glanced), knows how many objects five and six mean. From counting and from seeing the groups of fives and sixes he comes to perceive that, as a matter of visible fact there before him, five and six really do make eleven.[18]

Suppose the subject is American history and the question concerns the causes of the Civil War. From reading, discussion, and consideration of concrete episodes the apt student in the history class will have come to see that this and this and this other influence were involved; finally he will come to see that certain explanations best fit all these facts together, somewhat as the girls saw that pushing certain groups of blocks together made the roof line of a building or completed the figure of a man. Suppose that in physics the question is as to how rays of light are reflected. Again from reading, experiments, and observation of what light does when it shines through a window or through water, a student obtains an idea as to what does happen, and he sees that the general explanation in the text does fit these phenomena. Or suppose, finally, that the learning is in a "real-life" situation such as was mentioned in Chapter XI. A group of secondary school youngsters has visited coal mining towns, talked with miners and mine superintendents, discussed these matters among themselves and with their teachers, and read relevantly and widely. Then the progress of learning is a process of fitting all these diverse ideas and impressions into some coherence.

All too often pupils do memorize definitions, formulas, or facts without understanding what they mean; and they become glib with geometrical theorems or an apt phrase in history or a formula in physics or a platitude about the relations of management and labor. Such knowledge may sometimes be sufficient to answer the questions on an examination—questions often equally superficial. As a result, teacher and student are often lulled into a feeling that adequate understanding has been obtained. But psychologically there has not been the full sense of rightness or the complete fit in a situation previously incomplete, which a real right answer gives. Moreover, as will be shown later, such superficial learning has little permanence. Nor does it fit in to total situations richly enough so that there is application outside of school. The learner is like a baby who does his little tricks only if he is in the nursery at a particular time and surrounded by just the familiar family faces.

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[18] After the child has come to a recognition of the reality of this fact he may need to gain facility in dealing with the abstract symbols $6 + 5 = ?$ so that he can promptly respond with eleven; but this facility is a derived one which, for its genuineness, depends on the prior concrete apprehension of number facts. Otherwise, the multiplication table may be little more than *sig* plus *ump* equals *squig*. All too often the not-too-bright high school girl in the geometry class memorizes theorems as uncomprehendingly.

Eventually a pupil can be brought by various means to see that the good answer does fit. His attention can be directed to this or that significant phenomenon. He can obtain clues directly from the teacher. Various means may be used by which he can be helped to perceive the fitness of an explanation. Some of these, such as an arbitrary statement by a teacher that an answer is right, really contribute little to his sense of that fitness. The purpose of the teaching is to bring out as quickly as possible (and without undue blundering and waste of time) the evidence that certain statements do indeed summarize the phenomena in question.

Why (the second question) after the right or "best-fitting" answer has been discovered does this answer or response tend to be made again if the problem is met again? Quite clearly because all the various interrelations have been more adequately sensed and the fitness of this answer established; merely running over the matter again and again in mechanical review will help little and may even harm. Such review or drill is valuable only as it gives an opportunity for the further and more complete appreciation of the manifold rightness of the best solution. There is further appreciation of the relevance of the solution to the interests and incentives originally involved, and to the total situation; hence there is increased reinforcement by those interests and incentives and support by that situation. The right response is thus more and more completely integrated with the pupil's total system of thinking. It becomes a part of the total process of intellectual development which is true learning.

Practically all a pupil's efforts in learning should thus be directed toward seeing relationships and developing understandings. But a teacher may on occasion make use of somewhat more superficial ways by which an individual's habits, attitudes, and interests are often extended. Many habits, attitudes, and interests develop because they occur together under conditions which foster acceptance, as in advertising and propaganda. The reader who has listened to much radio advertising has probably unconsciously learned the trade names and attitudes associated with the initials "B.O." or the phrase "At the sound of the chimes, it's time to shine."

In the latter instance the chimes on street clocks may remind him to look at his shoes. The school may well take advantage of these principles in learning. Thus if the teacher wishes to develop in her pupils a love of country, belief in the Rights of Man, or an appreciation for the democratic mode of life, she may present meaningful experiences for understanding these values in situations which arouse pleasant emotions. The sponsoring of these values by admired leaders, and indications of belief in them by large numbers of acceptable persons will add greatly to the speed and degree of learning. The use of such propaganda techniques should be limited to teaching universally accepted values which form the guideposts for rational thought. Extension of these techniques to areas of controversy would produce blind following of the side fostered and would make intelligent decision-making more difficult. Nonetheless, such teaching techniques need not be frowned upon, as they often are; without them these values probably cannot be taught by the school and will find their primary inception from outside agencies, e.g., the home, the neighborhood, newspapers, etc.

In still another sense, the teacher needs to think of the process of learning as more than the mere development of logical insights. For teachers often present each of the details of a unit as if they were attempting to complete or focus a picture "on the ground glass" of the pupil's mind. However, learning is not a suddenly focused picture in place of a previously amorphous mental mass; certain dynamics of the mind determine in their peculiar way the manner in which a thing is perceived and forgotten. Errors in learning are not due to chance but are expressions of the process of learning. Thus most children's reading errors represent attempts to reduce the difficulty of the word to a known level, i.e., "ping" read as "pink" or "pig" (23.) Another illustration of the dynamics of errors is the tendency to misspell long words primarily by omissions, but to misspell shorter words in various ways (48). Other studies show that after initial learning, memories do not just wear away; they change in regular ways. In teaching, the teacher must consider the dynamics of the pupil's striving, his predictable tendencies to misperceive, and the regular tendencies of memories to become distorted with time. Her presentation must be logical enough to be understood, but it must also be given the correct psychological emphases so that when the pupil comes to respond later he will do so correctly. To use a modern analogy, if one wishes to bomb a submarine, he should not aim directly but take into account the speed and direction of the plane and submarine, the wind drift, and the angular deflection of light rays by the water. It is important, therefore, that the teacher understand the pupil and the dynamics of his learning as well as the details of her subject matter.

SUMMARY

The efficient control of the learning process is indeed a highly complex job. The nature of the learner—his readiness, his motives, and the manner in which emotions affect his learning—was considered in the preceding chapter. The present chapter has shown how the teacher must skillfully arrange the school or other situation in order to give pupils the maximum of stimulation toward the desired goals. The sociology of the schoolroom is one factor determining the effectiveness of her efforts. Thus differences in social climate may lead to eager cooperation or to grudging appeasement. Child grouping or cliques may distract or enhance the efforts of pupils, depending on how the teacher adjusts to them; social isolation always represents a prior problem before schoolwork can seem worth while. The teacher also needs to consider how the form of her requests and directions will be received; they need to be understandable and reasonable, and stated in such a way as to be specific in their direction but not to arouse resistance.

Having set the stage for learning, the teacher must consider means of providing activity, knowledge of results, and success in order to insure understanding and motivation. Research indicates the necessary steps in learning certain activities and also the most probable errors; such information is invaluable to the teacher in the initial planning of the learning situation. After this she must adjust to the different and devious paths which the pupils will take in learning. Here various diagnostic devices will assist the pupil and the teacher to keep track of progress made and to determine areas for next efforts.

But a teacher must not be lost in the detailed complexities of the learning process or be confused by much good advice. Fundamentally, the process of learning is a simple and pragmatic thing. The right answer or response is the one that works; it fits the felt need and seems right and fitting in the situation. And once the right answer is found or the right thing done, there is after all no mystery in the fact of its being done again. It is done again because there is a greater sense of its rightness and enjoyment of the feeling that it is right. And the teacher's effort in making sure that the individual will continue to give the right answer or do the right thing should not at all be simply to bring about the practice that is wrongly supposed to make perfect. Rather it should be to bring it about that increasingly, in successive doings, the learner does find that the right response is indeed fitting and that he increasingly feels satisfaction in its rightness.

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CHAPTER XIV

Methods for the Appraisal and Direction of Learning

The chapters thus far in Part II have been based largely on results of some kind of measurement. It has been emphasized again and again that if the work of a class is to be efficiently directed—in fact, if it is to be directed at all—and if a pupil is to proceed intelligently in his work, there must be information of one sort or another as to progress. When a student is in difficulty, it is essential that the means for locating its causes be available and be used. In the discussion of incentives and of guidance of learning it was reiterated that if an intelligent learner is to be adequately motivated, he must know where he is in his work, have some idea as to where he should go, and know his position in his progress toward this goal. Every consideration, therefore, emphasizes the importance of a means for the appraisal and direction of learning, if learning is to be effective; and this means must now be considered.

In fact, it could almost be said that this volume is based upon the results of measurement of some sort. This should not seem strange if one considers that textbooks in physics or chemistry consist almost entirely of the results of measurements; without such results, texts in these subjects would be almost inconceivable. That much educational practice has developed without having measurement as a core is an indication of the relatively undeveloped state of educational theory and method.

In considering the material of this chapter, the reader should be conscious of its outstanding importance. He should also realize that work in measurement and evaluation, being relatively new, still has many faults, includes much that is poor, and is therefore open to criticism. And he must not be misled by the weaknesses of much of the present work in the field, and the entirely valid character of much of the criticism, into the assumption that adequate appraisal is impossible or even that most of the work so far is to be discarded. In fact, one might almost say that the amount of criticism is a good indication of the importance of the whole problem, and that from the variety of work in the field a far more adequate and sound approach than ever before may soon be synthesized.

THE IMPORTANCE OF OBJECTIVES AND YET MORE OF A BROADER REALISM

The objectives of an educational program must be considered before a sound evaluation can take place. A major source of difficulty in teachers' attempts at appraisal is that they do not have an adequate and clear idea as to what the results should be. In consequence, they give tests and examinations stressing knowledge of historical facts when their objective should be not memory of such detail but rather understanding of present problems in the light of their historical backgrounds. The tests should cover these last matters. Teachers teach and test for knowledge of grammatical rules when teaching and testing should stress effectiveness in oral and written expression. They are likely to pay little attention in either teaching or testing to such objectives as the development of ability in leadership.

The determination and formulation of educational objectives are a complex matter indeed, involving a total educational philosophy. For use in measurement (and in teaching) their statement must not be too general. Thus such objectives as the attainment of vocational success or social adjustment or ability to draw inferences need to be made more specific. And they need to be put in terms of determinable outcomes or behavior. How will vocational success or social adjustment or ability to draw inferences be shown? Presumably vocational success will ultimately (though inadequately) be shown by such facts as the getting of a good job and good income. How about social adjustment and ability to draw inferences? Is social adjustment shown by the number of evenings out, and ability to draw inferences by the wisdom of purchases after reading advertisements? Presumably such bits of behavior are by themselves inadequate. But sound evaluation must consider how attainment of an objective will affect what a student does before it can adequately plan means to find out to what extent that objective has really been attained.

Consider problems of appraisal and evaluation in educational psychology. What are the important objectives in that subject? Surely the objective is not simply to be able to answer questions about this textbook! Presumably the general purpose is to make better teachers and, slightly more specifically, better to understand child development and learning. But the objectives are still too general to be of much use in either teaching or testing. There should be analysis which gives many more specific objectives, like ability to recognize symptoms of emotional strain in children, ability to make a good case study, ability to bring about a classroom situation favorable for learning. How will such abilities show themselves? Ability to make a good case study (to use this objective as an example) will involve such acts as planning the topics to be covered, deciding upon the sources of information to be sought, establishing rapport with these source people, and so on.

Evidently such lists of specific objectives and evidence regarding them might include issues of different importance, and might be so lengthy that only a sampling could be attempted in any practicable test or other means of appraisal. By the best judgment available (judgment of experts if possible) or by research evidence, more important material must be differentiated from less. And sampling must be carefully planned so that it is systematic.

But after objectives and their outworkings in behavior have been determined, there is still the practical problem of measurement. How may evidence of ability to recognize symptoms of emotional strain in children feasibly be determined? Will a true-false test or an essay examination really be satisfactory for this purpose? Or does one have to wait till this student becomes a teacher and then see how she does in this respect? This delay would make impossible any help for the student, now, on the basis of the results. Cannot means be found by which, now, helpful appraisals may be made? The remainder of this chapter deals largely with these practical questions.

One further point must, however, be mentioned—a point usually overlooked. It is not enough simply to determine the extent to which objectives have been reached. There may have been other consequences! Some unfortunate results, like boredom or truancy or dislike of "good" literature, may be brought about by schoolwork. Good results one never thought of may occasionally also come, like a gift from a parent to the school library, or the return to school of practical-minded adolescents and a reduction in delinquency, when courses in typing and shop training are introduced. An adequate and realistic program of appraisal will not only cover intended objectives but be alert to secure other results.[1]

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[1] Sometimes school authorities attempt to evaluate a school by listing what they consider good characteristics and then checking off how a particular school compares. Such a check list might include questions like: "What degrees do the teachers have?" "How many books are there in the library?" "Is there adequate lighting in all parts

THE REAL-LIFE TEST OF EDUCATIONAL EFFECTIVENESS

Most educational objectives are concerned with behavior in life situations, primarily out of school, and in after-school adult life. It is of little use having an educational program which would show only in recitation or examination in school, left children doing just the same as before outside of school, and had no effect on their success or failure in adulthood. Consequently, the best test of the effectiveness of education is to find out whether the students do behave differently in life as a result of schooling, and are affected in their success later. For instance, if one of the objectives of an educational program is the development of good health habits, a realistic test of the effectiveness of that program is whether the students do show better health habits in their daily lives. It is probable that this same health program may be designed eventually to improve the health of the community; surely it should affect health later as well as now. If the program is really good, sooner or later vital statistics should show an improvement in community health.

It is unfortunate indeed that educational efficiency is rarely measured in terms of these larger effects on the lives of people. It is more customary to measure these consequences in terms of knowledge acquired and known shortly thereafter. But there is no guaranty that that knowledge will be used or that it will even be useful. The true test of education is whether it will provide better ways of living and a better world. This test is the hardest of all tests to apply. It is easy to give students a paper and pencil test and to find whether they know more about a subject than they did when they first entered school, but it is usually hard to observe children in their homes and during their recreation hours in order to see how schooling has affected them. And it is still more difficult to follow up and find whether their schooling had any effects later in their health or vocational success or happiness as adults.

Evidence Gathered Outside the School.—Obviously, the soundest and in fact the only real evidence of the effectiveness of a school safety campaign would be data from police and medical records showing a reduction in number of accidents. The success of a community

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of the classroom?" It is assumed that a school with most of the desirable features in the list will be most effective in producing desired development in its students. But such an appraisal is rough indeed, and sometimes deceptive. Thus an expensive plant may be merely a show place, a large library may be relatively inaccessible, and high school teachers with a doctorate may be persons unable to get jobs in college or industry. Conclusions from such surveys must be drawn with great caution.

clean-up campaign sponsored by the schools could really be determined only by going out and seeing whether vacant lots and back yards had been cleaned up. Effects of character education should show in a reduction in the number of cases before juvenile court. Presumably the best evidence of the efficiency of a trade school would be found in the employment records of its graduates. Schools should make much more use of such data than they do. For instance, do the high school literature courses have any effect on the type of book most popular in the public library, or (more important still) the magazines most sold at newsstands? Is there a course on appreciation of moving pictures, and does it increase attendance at good pictures and decrease attendance at bad? Usually it is found that the schools have little or no such effects; that finding should indeed be a challenge. Data of this sort will be stressed in a later chapter.

TABLE 47.—The Effects on Life Behavior of a Five-Year School and Social Agency Program Emphasizing Diet and Sleep (42)

	N	Effect of Program
Caloric content of meals at or above standard	336	+28% [a]
Sleep at or above standard	331	+23% [a]
Weight at or above standard	331	+ 8% [a]
Sociability (3 or more companions)	337	+24% [b]
Self-care responsibilities	312	+ 5% [b]
Responsibilities in home	310	+ 6% [b]
Teeth corrected	154	+44% [b]
Neatness in appearance	411	+ 3% [b]
Well-balanced emotional adjustment	477	+10% [b]

[a] Improvement based on comparison of scores before and after program.

[b] Improvement based on comparison of two groups, one in program a long time and the other in a short time.

Special means may be employed to gather evidence regarding out-of-school outcomes of a school's efforts. Thus in one city school, home visitors from a social agency cooperated with the teachers in emphasizing good diet and health habits over a five-year period. The visits to the homes made possible systematic observation of the effects of the program over this time. Table 47 shows something of the range of data which may be thus gathered—and is heartening evidence that, at least with such a combination of forces and over such a period of time, something can be accomplished.

Evidence Gathered Within the School.—The most extraordinary lack in measurement and evaluation is the failure to use such "real-life" tests within the school itself. Opportunities lie on every side, if teachers would only see them. Real effectiveness of a school health program can be measured by number of absences due to illness. Amount of tardiness and truancy can be used as evidence of the extent to which the school has aroused the interest of its pupils. Efficiency of a campaign to increase the amount of voluntary reading done by children should show an increased use of the school library. Results of efforts to get children to eat a better-balanced diet have been measured (as will be mentioned later) by changes in type of foods chosen by the pupils in the school cafeteria.

Particularly in fields where formal measurement is very difficult can such means be exceedingly helpful. Thus one of the writers (as already mentioned) measured the sociability and social alertness of college students by finding how many other students in a class each student knew by name. As was also brought out in the preceding chapter, the extent to which interest in a subject has been aroused may be evidenced by the number of students who elect further courses in that subject. Efficiency of a course on methods of studying may be shown by the grades made by these students in other courses taken concurrently and thereafter.

The nature and the gathering of such data may be more or less formal. Very informal are "anecdotal records." These are simply notations of any episode which seems significant. A boy's progress in a class in current events may be shown by his bringing in a newspaper clipping, his comment on a radio newscast, his argument with another boy; one lad's volunteered design for something to be made in the school shop, and another's report of a visit he made to a local factory, may be highly significant of progress in an industrial arts class. A home economics teacher had her girls invite boys to a class hour when personal grooming was to be discussed; the way certain careless girls spruced up for that occasion and acted afterward on certain matters which came up in the discussion was very significant for the anecdotal record. Mary's saying that her family has subscribed to a magazine recommended by her English teacher is a proud item in that teacher's anecdotal file. An instructor in educational psychology treasured the fact that a student stopped after class to discuss her younger brother in a way that showed a fine understanding and application of the topics considered in the course. Perhaps it need hardly be mentioned that mere haphazard noting of bits and tidbits is not enough. Anecdotal records should be systematically kept. They may then provide an exceedingly valuable and colorful picture of learning and growth and become part of a case record which is still more valuable and has still larger perspectives.

Anecdotal records are of special value as indicative of social and emotional situations. A home economics teacher noticed that a certain rather homely, shy girl ate her lunch less and less often in the school cafeteria. Inquiry revealed the fact that all her junior high school friends had become members of certain pernicious sororities and were now eating together in snobbish seclusiveness at certain tables. The homely little left-out girl was utterly miserable, and rather than obviously eat by herself she slipped out and got a bite at a drugstore some blocks away. Incidentally, this episode is a good example of the need to keep an eye open to everything that goes on, i.e., the need of the alert realism mentioned earlier in this chapter. One can never tell when something significant will bob up.

Somewhat more systematic are records kept by either teachers or pupils on some special matter. The list below shows the favorite books of a group of boys when they were in the seventh grade and in the ninth grade. Certain shifts in interests, due presumably in part to greater maturity and in part to the teaching, appear. There are many opportunities to keep such significant records (27).

Seventh Grade	Ninth Grade
Bob, Son of Battle	*Saga of the Bounty*
Tom Sawyer	*Cyrano de Bergerac*
Huckleberry Finn	*Merchant of Venice*
Smoky	*Spike*
Treasure Island	*Silver Box*
Jim Davis	*Mysterious Island*
Big Enough	*Count of Monte Cristo*
Lance of Kanana	*Princess Marries the Page*
Twenty Thousand Leagues Under the Sea	*Thirty Fathoms Deep*
Dark Frigate	*Secret Cargo*

Observation may be selective and organized with reference to significance in some special matter. Thus, the following list (from the Vineland Social Maturity Scale) gives activities found by research to be typical of 10-year-old youngsters. The user simply checks on such a list for each age those activities which a particular child is able to perform; an estimate of social development can thus be obtained.

Participates in pre-adolescent play
Writes occasional short letters
Uses tools and utensils
Carries out written instructions
Makes telephone calls
Does small remunerative work
Goes about home town freely

Rating schemes for the systematic appraisal of real-life behavior such as those shown in Chart 73 may be used. Such schemes yield results rough indeed, but nevertheless they can often be of distinct service. The first tries to characterize degrees of a trait by a brief description. The second uses as points of reference certain typical individuals known to those rated and then compares others with them. Most neglected and often most fruitful as a source of appraisals are the students! In many respects children and adolescents are excellent judges of their associates, and they see their classmates in many situations and relationships other than those observed by teachers. The chapters on social development made extensive use of such material. When children were asked to give the names of other children whom they would like to have sit next to them, a definite social structure was found, and also isolated pupils who presented marked behavior problems. "Guess who" techniques may be used; brief descriptions of various types of persons are read and the pupils are to guess who in their room might be meant. Still other methods may be proved valuable.

A

14. Does he lack nerve, or is he courageous?

White-livered, fearful (4)	Gets "cold feet" (3)	Will take responsible chances (1)	Resolute (2)	Daredevil (5)

B

Social Sensitivity:

Low, as in Edna	Average, as in Martha	High, as in Ruth

Chart 73.—Two Types of Rating Scales for Use in the Appraisal of Learning (Haggerty-Olson-Wickman)

Use of Experimental Real-Life Situations for Appraisal.—The above methods largely take things as they come. But it is possible to set up experimental real-life situations and see what happens. For example, to find what material might stimulate the interests of students in educational psychology, one of the writers each week had an exhibit put in a homemade showcase standing at the entrance to the classroom. A student kept a record of the number of students who paused going in and out of class to look at the exhibit. This record was a rough measure of the interest value of these materials. In a physical education class it was arranged that on certain days the instructor would be three minutes late; during those three minutes an assistant kept a record as to which students talked with each other and which stood apart. By a little ingenuity a teacher can so manage her class that frequent opportunities occur for participation, leadership, original thinking, and the mention of happenings of significance. In Chapter XVIII, further instances of such appraisal will be mentioned. But it must also be stated that the conventional old-fashioned rigidly disciplined class almost completely blocked the appearance of such evidence.

Experimental real-life situations have been used with special success in the study of character traits, as mentioned in Chapter IX. They are particularly needed there. If one wants to find out whether a child is dishonest, casual observation may not suffice because it is of the essence of dishonesty that he will try to conceal the questionable acts. And the result of more or less direct inquiry may even be deceptive; a dishonest little tyke may make a show of virtue whereas a franker youngster will admit occasional deception. So certain simulated real-life situations were set up. Pupils were given short tests in arithmetic and the papers were at once collected and scored later by the teacher; afterwards, similar tests were given but the pupils were allowed to score these themselves without supervision. Dishonesty was evidenced by marked superiority of self-scored over teacher-scored papers. Children were sent on errands during which there was opportunity to steal small sums of money without apparent danger of being caught, or to keep extra change instead of returning it. Cooperation and altruism were measured by inviting children to come to school early to work on scrapbooks for a children's hospital; the cooperation score was the number of times each child came. The essence of all these tests was that they gave the youngster a controlled real-life opportunity in which to exhibit the trait in question.

Substitutes for the Real-Life Test.—Whenever possible, then, a teacher should appraise a pupil's development and learning not by recitations or paper-and-pencil quizzes and tests, but by what he actually does in situations such as those the school is trying to prepare him to meet. But often real-life tests are not feasible, or at least not easy. It is far easier to ask him what he knows about correct diet than to find out what he eats at home or even in the school lunchroom. To find out what a class knows about the Declaration of Independence or Jefferson or trade with South America by having them answer certain questions on these topics is natural and straightforward. Special means may be necessary for special tasks. Casual observation of the way a child reads will hardly make clear whether he is a slow reader or not; he may be reading slowly at a particular time because what he is reading is very difficult. A standard easy passage, for which the average time of reading is known, will here be desirable. A vocabulary test will best find whether a limited vocabulary is the chief cause of his difficulties in reading. Special diagnostic tests may cover systematically all the various common difficulties in arithmetic or all the important usages in punctuation, and show clearly that John does not know how to carry or Mary how to use punctuation marks.

But when a teacher uses such devices as examinations or tests she must keep in mind that a student's good showing on them does not assure that he has learned what the test or examination covers so that he will use it in real life. A pupil may glibly answer questions about proteins and vitamins and a balanced diet and yet have no clear idea what he should choose at the school lunch counter to get that balanced meal—of course he may know, but still not eat the food he should. Mary may correctly put in quotation marks on the printed blank labeled "Punctuation Test" but rarely put them in when she is writing something herself. Contrariwise, a pupil may choose sensible food without knowing about vitamins, or speak and write excellent English but not score high on a formal test of grammar. However, good tests and examinations will in general show agreement with real-life tests.[2]

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[2] A test or examination is "valid" only if it measures what it is supposed to measure. A real ability, as it appears both in school and out, is most adequately shown by what has in the preceding pages been called "real life" tests. Thus the validity of tests of grammar and punctuation may be checked by finding how well scores on these tests agree with counts of errors in punctuation and grammar in letters and other writing done by pupils to whom the tests were given. The extent to which students

The remainder of this chapter will deal primarily with tests and examinations of various kinds—first with such means of appraisal as teachers themselves may devise, and then with tests and related material devised by experts. The reader should note the advantages and disadvantages of each, and consider how they may be used to help a teacher and to guide pupils' development and learning toward desirable objectives. But scores of tests must never themselves become objectives; goals must be real-life goals and progress toward them determined so far as possible in real-life terms.

TEACHER-MADE METHODS OF APPRAISAL

Familiar to everyone are the first and third methods of appraisal to be considered in this section: the essay-type examination and the oral quiz. Teacher-made objective tests are now widely used, and the value of intensive interview methods for the study of educational problems is being increasingly realized. All four of these methods have the advantage, as compared with the standard tests to be discussed shortly, that they can be made to cover just the topics, problems, and points of view the teacher or school desires. They can thus be tailor-made to fit special programs based on local needs. Obviously all are limited by any limitations or faults of the teacher or school as regards the worth of the problem, the care in selection of the material, and the ways in which questions are put and answers appraised. These considerations must be kept in mind.

The Essay Type of Examination.—This type of quiz, which is familiar to every student, consists simply of a list of questions to which the student is to write out answers. The questions may be challenging and thought-requiring or they may be nothing more than a call for regurgitation of information memorized from the textbook. Compare the following two questions on this chapter:

1. Give three suggestions of ways in which you might in your first year of teaching use real-life tests to determine the progress of your pupils.
2. Summarize three examples of real-life testing mentioned in this book.

The first question calls for some originality, applies the matter under consideration to the student's field of work, and may stimulate think-

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who scored high on a test or examination regarding diet chose sensible meals in the school cafeteria would be valuable evidence as to how much the test or examination tested real functioning knowledge of wise diet. That is, it would be evidence as to the validity of the test.

ing and discussion which will be of help to her when she begins teaching. The second question is obviously lacking in all these particulars.

The proponents of the essay-type examination rightly argue that questions of the first kind make a student think, organize his ideas, and display any originality which may be in him. His ability to express himself clearly and correctly in writing is also involved. But difficulties must not be overlooked. Because of the time required for answering most such questions, only a few can be covered in an examination period, and the number of topics included is limited accordingly. A student who expresses himself easily and well in writing may do much better on such an examination than another who knows more but is awkward in written expression. Mere quality of handwriting may influence the mark which the average teacher gives a paper by as much as one letter grade; the same paper written in a good hand may be marked "B" but if in poor handwriting is likely to be marked "C" (22). Speed of writing will play a part in that the slow writer will get less down on paper in a given time. And evidence piles up that grading essay-type examinations is so unreliable and inconsistent as to make the results distinctly unsatisfactory.

TABLE 48.—Scores, on a Scale of 24, Given by Ten Different University Examiners to the Essay Papers of Four University Students in an Examination on Medieval and Modern History [3]

Score	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Md	Range
Jones							2			1	2	3	2								12	6
Smith				1					2	1	2		1	1	1					1	11	16
Green	1	1		2			2	1	1	2											7	9
Carter			1										2	1	1	3		1		1	16	17

For instance, a paper in geometry was sent out to 116 geometry teachers with the request that they grade it on a percentage basis as they would if it were an examination in one of their classes. The grades varied from 28 to 91. A final examination in high school English was graded from 50 to 95 by 142 English teachers; an examination in American history received marks ranging from 42 to 90; a college freshman English examination was marked 20 by one instructor and 68 by another in the same department; another paper was marked 72 by one instructor and 91 by another. Even meticulous examiners in universities may vary greatly in their appraisal of a paper, as is well shown in Table 48. Green's median was lowest in the total group of 17 students and Carter's highest, but one examiner rated Carter's paper below Green's median. Jones and Smith have almost the same medians, but the examiners vary from 4 to 20 in their appraisal of Smith's paper while the range of scores is only 6 on Jones' effort. Clearly papers may differ not only in the average ratings given them but also in the amount of disagreement about them.[4] As every student knows, some teachers tend to grade high and others low; some stress good English and others try to neglect this factor; some prefer outlined answers and others deplore them. But a teacher is rarely consistent with himself; if he regrades a paper after a lapse of time his second mark is likely to differ from the first.

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[3] Adapted from (18).

The essay-type examination thus not only yields scores that may vary greatly from teacher to teacher or from time to time for the same teacher, but also involves various factors not intended to influence the score, or at least not in the way they often do. The following episode is of interest in this connection:

> Two college freshmen reviewed together a course in European history. Alice quite evidently had studied well during the term and had a large assortment of facts; Dorothy's knowledge was distinctly sketchy. The next day the two girls took an essay-type examination which consisted of five quotations from famous authors concerning the period covered. The class was supposed to show how these quotations applied to the period, and to come to some judgment as to the adequacy of each as a characterization. On this examination Dorothy made an "A," but Alice failed. Why? To begin with, Dorothy had a clear, legible handwriting, whereas Alice's scrawl tried everyone's patience. Moreover, Dorothy was quick to adjust herself to the unexpected, whereas Alice tended to be thrown into a panic—and questions of the type asked were not at all what the two girls thought they would meet. Then, too, Dorothy wrote easily and fluently, but Alice composed slowly and with awkwardness. Dorothy had a further actual advantage in answering the type of question presented because she knew so little that systematization of what she knew was easy. Alice knew so much that the task of selecting appropriate items for each question, and of organizing them into a coherent answer, was difficult and time-consuming. A final difference in success lay in the standards of work shown by the two girls. Alice was an able and conscientious student, considered all sides of a proposition before coming to a conclusion, and held herself to unusually high standards of work. Dorothy was content with an approximation of accuracy, rarely hesitated between two points of view because she so rarely knew there were two, and had a keen sense for dramatic incidents. The reasons for her success were that she wrote legibly, had an alert but not profound

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[4] The data first mentioned in the above paragraph are from early investigations: D. Starch and E. C. Elliott, Reliability of grading, *School Rev.*, 1912, *20*, 422–457; 1913, *21*, 254–259, 676–681; and N. Silberstein, The variability of teacher's marks, *Eng. J.*, 1922, *11*, 414–424. The table is from a recent English study.

mind, had a glib knack for expression, knew so little that systematization was relatively easy, used dramatic incidents instead of a heavy discussion of historical developments, and was untroubled by the hesitations that come with real understanding. Poor Alice knew too much, understood deeply, and was too serious-minded.

The essay-type examination thus has these advantages: (1) It can be made to exhibit the student's capacity for organizing material and for thinking independently, and (2) it gives him an opportunity to show what skill he may possess as regards clearness and effectiveness in the expression of his ideas. Moreover, (3) if the teacher will carefully study a pupil's answers, she will often obtain valuable insight into his methods of thinking and his personality. However, even at its best, it has the following faults: (1) Various factors such as speed and quality of handwriting and ability in English composition almost always influence the teacher's appraisal of the pupil's grasp of the subject matter in question. (2) Even though the above-mentioned factors are allowed for, the great variations in answers from different pupils and the lack of definiteness as to what may be considered satisfactory or inadequate make a definite appraisal of the merit of any answer almost impossible. Furthermore, (3) in proportion as the topics dealt with are such as to call for effective organization and fineness of expression, they must be such that only a few questions can be asked; the examination is therefore likely to be limited in its scope.

The essay-type examination can obviously be improved in two general ways. In the first place, the teacher should phrase her questions very carefully so that they are unambiguous and clear as to topic and scope. And in the second place, she should with equal care plan her grading of the papers so that her appraisal will be less casual and more systematic than is ordinarily the case. When she formulates her questions, she should jot down what she wants as answers, listing the points she thinks should be covered and the insights she hopes that the pupils will display. When she begins grading, she should first sample the papers to obtain some perspective as to what the students actually have done and to discover any misconceptions which her questions may have aroused. If she will have patience to annotate the pupils' answers carefully and to discuss the papers with the class, the examination can be made highly educative as a basis for review and as an evaluation of thinking.

Teacher-Made Objective Tests.—As a means of avoiding the faults of essay-type examinations mentioned above, a teacher or school may use the so-called objective tests. Most common are true-false and multiple-choice questions, as illustrated by the following items, the first of each pair being informational and the second calling for some judgment.

Directions: Read the statements below. If you think a statement is true, put a T in the parentheses in front of it; if you think a statement is false, put an F in the parentheses.

( ) 1. I.Q. is the abbreviation for intelligence quotient.
( ) 2. The grade system of annual or semi-annual promotions has failed to produce homogeneous groupings in the public schools.

Directions: After each of the following questions there are five answers. You are to copy into the parentheses before each question the letter of the answer you think is *best.*

( ) 1. What does a plateau in the learning curve represent? (a) a great increase in improvement, (b) a gradual increase in improvement, (c) a period of no evident improvement, (d) an ascent to the physiological limit, (e) a period of marked loss of skill.
( ) 2. What would you consider the best adjustment for a brilliant child? (a) to let him progress through school as fast as he conveniently can, (b) to keep him in the normal grade for his age and give him the regular amount of work, (c) to let him use his spare time to teach other children in his room who are having trouble with their work, (d) to provide an enriched curriculum and moderate acceleration, (e) to give him twice as many problems of each type as are required from the child of average ability.

It will be noted that these questions are so arranged that the answers appear in the left-hand margin, thus putting them all in a column where they can be easily scored by comparison with a strip of paper on which the correct answers are indicated. Such questions can evidently be graded definitely as right or wrong (the grading is "objective," as compared with the "subjective" grading of the essay-type examination). Writing is eliminated, and consequently the factors of speed and quality in handwriting and ability in English composition are not involved. Finally, a pupil can answer a larger number of such questions in a short time—often as many as 200 in 50 minutes—and in consequence the test can cover a much wider range of material than an essay-type examination. There are further advantages. Such tests are obviously much easier to grade than an essay-type examination. Because the grading is highly objective, a teacher can compare different classes, or a principal can give the same test throughout his school and make comparisons. Moreover, such tests have definite advantages from the point of view of teaching. If, after the test has been graded, the teacher returns the paper to the class, the objectivity of the test permits each pupil to find out exactly where he made his mistakes and to discuss specifically any point about which he is not clear. Here is a very important though often neglected pedagogical value; a low grade on an essay-type examination usually leaves a pupil in the dark as to what was wrong with his answers, whereas with the objective test he knows exactly where he and the teacher differ.[5] Objective examinations are most commonly mimeographed, and the blanks given to the pupils to mark. However, separate answer strips are now often used. These answer units permit a mimeographed or printed test sheet to be used over and over again.

In making objective tests, the usual procedure is for the teacher to go over the material to be covered, jotting down such items as seem important to her and can be thrown into an objective test form. The whole series is then carefully gone over for phrasing and worth-whileness, and doubtful items are thrown out. The formulation of objective questions will be found difficult at first, but with practice a teacher will develop skill in it. However, it is not necessary that she formulate all the questions herself, for she will find it both educative to the pupils and helpful to herself to require them occasionally to construct a few objective questions on the classwork. After a little practice, many pupils learn to make excellent questions of this type, and they enjoy the work. Furthermore, a much greater variety of questions and phraseology will be obtained than when one person—the teacher—makes up the entire examination. Every good question should be put on a 3 x 5 card, and a file of questions thus built up.

In making such questions certain common mistakes must be carefully guarded against. Questions must not be so obvious that they can be answered by anyone with common sense or shrewdness. Particularly there must be an effort to formulate judgment questions, not simply questions on bits of unimportant information. In making multiple-choice questions, adventitious cues such as making the right answer longest must be avoided, and wrong answers must not be so absurd that no sensible child would check them.

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[5] It should be realized in this connection that the definiteness of the objective test cuts both ways—if a teacher makes errors in grading, the pupils can catch her; and if a question is ambiguous or her "right" answer not really a good answer, they can easily raise the issue with her. Essay-type examinations permit her to "get away with" poorly framed questions and careless marking because she can hide behind vagueness and generalities.

The teacher-made objective examination has the following advantages: (1) Grading is objective. (2) Such factors as ability in handwriting and English composition are eliminated. (3) A large number of questions can be covered in a relatively short time. (4) Grading is easy. (5) Because of the objective grading, comparisons between different classes, grades, or schools are possible. (6) Because of the objectivity of the material, specific errors in the work of the pupils (or the teacher) can be readily determined. The method is evidently valuable, and with the gradual development of improved techniques and of files of good test items it will be increasingly used.

Two misconceptions regarding objective tests remain to be disposed of. It is often said that these tests are artificial and somewhat beside the point, since they call only for the discrimination of the right answer and not for recall. But in everyday life such discriminations are very common; somebody makes a statement, and one must decide whether or not it is true; or several possible alternatives are being considered, and one must decide which is best. The objective test is really not so artificial after all. Much less common in everyday life—in fact, almost never occurring outside the schoolroom—are such questions as "List the five most important causes of the Civil War" and "Discuss the character of Benedict Arnold."

It is also sometimes declared to be dangerous pedagogy to put a wrong statement before a pupil. This would appear to be true only in case a wrong statement is presented under such circumstances that it will be considered right. In a test this is not done; instead, the question is raised for each statement as to whether or not it is wrong. And if the papers are returned to the children, especially if they are gone over and discussed with the class, no educational harm would seem to be done. In fact, there is some evidence that if a pupil makes a mistake on an objective question and has it corrected, he is more likely to remember the right answer than if he marks the right answer in the first place (47). Another investigator found that inclusion of an item in a test increased the probability of its being remembered over 30 per cent (26).

The Oral Quiz.—Most common of all methods of appraising a student's progress in a subject is oral questioning. In this a teacher presumably also has other purposes—she tries to stimulate discussion, to "make the student think," to arouse interest. But, more or less explicitly, she usually has in mind this purpose, that she aims to give the student something of a brief oral examination to find out how well he understands his work. The issue then is as to the adequacy of oral questioning and answering for such purposes.

It should be obvious that if the questions in an essay-type examination are often carelessly framed and subject to misunderstanding, the more offhand questions in an oral quiz are likely to have these faults to an even greater extent. And similarly, if appraisal of the written answers to an essay-type examination is difficult, that of oral answers will be even more rough and ready, inexact, and subject to error or the possibility of false impression. Since speech is more rapid than writing, more ground can be covered in a given amount of time. But the quizzing of any student is usually so brief as to more than offset this advantage. There is the further adventitious factor that differences between pupils in readiness or embarrassment when speaking before a group all too often play an important part in determining the adequacy of the reply.

It is unfortunate that there has been almost no research regarding the adequacy of the oral quiz. However, an investigation of the trustworthiness of oral examinations, such as are often given in a graduate school or in connection with undergraduate programs for honors, is suggestive in this connection. In this bit of research (39), a graduate student was given four separate 50-minute oral examinations on the same topic (the content of a brief master's thesis) by four different faculty committees, each consisting of two members. Two stenographers concealed in adjoining rooms kept a verbatim record of all the questions. The great variety of questions which may be asked by different teachers in dealing with the same topics was exhibited by the fact that only two questions were common to as many as three of the four examinations. And the extremely different conclusions regarding a student's knowledge which may be reached by different examiners was dramatically shown by the fact that the grades given this student by individual committee members ranged from 40 to 95; even after the two members of each committee had carefully discussed the examination, the committee reports varied from 50 to 90. Two committees passed the candidate and two failed her.

This strangely neglected problem of the reliability of the oral quiz should therefore be kept in mind by the teacher. She should realize that it is easy to form a false impression from an oral quiz or recitation, and she should try to frame her questions carefully and be very cautious in marking on the basis of oral recitation. She should always avoid sarcasm and try to keep such a spirit in the classroom as will permit ready expression on the part of the student.

The Intensive Individual Interview.—One last exceedingly valuable and much-neglected method of investigating a student's understanding of a subject (and, more broadly, any factor in his work or personality) remains for brief discussion. If, when a pupil is having difficulty with some phase of a subject, the teacher will have the patience and persistence to inquire about this work intensively, in a friendly, private interview with him, endeavoring to get him to "think out loud," exceedingly valuable insights may often be obtained.

For example, a child may be having trouble in arithmetic, in adding. If he is asked to work out loud, it may be found that when he attempts to add he searches for pairs of numbers which will combine to make 10, rather than figuring straight up the column, or he may surreptitiously count on his fingers. An investigation under the direction of one of the writers employed this procedure in trying to find out the causes of pupils' errors in capitalization (37). It was found, for instance, that one girl wrote "A tale of two cities is a very interesting story," because she thought that the title was a part of the sentence and therefore called for no further capitals. A boy wrote "God Bless us," because he thought that if God should be capitalized, so also should things God does. One girl put in many capitals because she thought them prettier than small letters. A boy whose name commenced with Q always began words starting with Q with a capital because he was so used to writing a capital Q. Even in the ninth grade a few children were found who failed to use certain capitals because the capital called for was unusual and they did not know how to write it.

In short, intensive individual interviews can be exceedingly illuminating as regards almost all teaching problems, and should be more often used in dealing with such problems.

THE STANDARD TEST

The preceding section has discussed teacher-made methods for the appraisal and direction of learning. The question now arises as to what educational research and ingenuity have been able to accomplish in devising improved instruments for purposes of such measurement. There have been notable developments in the past twenty years—developments that have markedly affected educational thinking, made possible scientific education, and put in the teacher's hands instruments of great value and convenience for facilitating and improving her work. What are the distinctive characteristics of these "standard" tests?

Characteristics of Standard Tests.—The most important and distinctive characteristic of a good standard test is this, that the material is carefully selected on the basis of curricular research, with reference to objectives in teaching the subject.

For instance, spelling scales are made up on the basis of elaborate counts of the frequency of the use of different words in the actual writing of both children and adults; only those words are included which are used often enough so that the average individual's need to know how to spell them seems unquestionable. Tests of grammar include only those mistakes which analyses of thousands of children's compositions have shown to be common —and also only the mistakes which authorities on grammar and philology consider serious. Arithmetic tests cover only such calculations as are actually frequently made in daily life. History tests aim to cover only such topics as the analyses of newspapers, magazines, and books discussing current problems show to be important. Construction of a test in ability to apply social facts and generalizations involved very careful consideration by experts in evaluation and teachers of the social studies in schools in various parts of the country, as to what generalizations were fundamental and significant for secondary school pupils to know, what problems it was especially important that students think about, and what the desirable and undesirable ways of applying these generalizations to these problems might be (46). Evidently the construction in this fashion of a battery of tests involved little less than a rethinking of purposes and materials in the social studies, and also of the ways in which pupils think and learn in dealing with such issues and ideas. A teacher has to rely largely on her own judgment in planning the tests and examinations she makes. But good standard tests are based on years of research and careful cooperative thinking by experts. They embody the results of all that work, condensed and organized with great care for the greatest possible incisive usefulness.

A large variety of problems must often be investigated. In making a spelling test, the question must be answered as to whether derived forms, such as *playing* and *played,* must be tested separately or whether only the word *play* need be included. In making a grammar test it is not enough to know that children make mistakes on the principal parts of verbs; the maker of the test should know which verbs and which forms of those verbs cause trouble. History tests must not only use important historical facts but must use them as bearing on important historical or social issues. Every bit of every item must be significant. Thus, in making a multiple-choice question, the wrong answers should be mistakes which pupils often do make. In making tests in the social studies certain statements a pupil may check may be so framed as to indicate democratic and others un-democratic points of view, certain reasons may be irrelevant and others contrary to fact. Evidence may thus be obtained as to both the direction and the soundness of a pupil's thinking.

Moreover, a standard test must be arranged with great care so that the directions are clear and unambiguous, each question is properly phrased, and the scoring is so objective and simple that error cannot easily arise. As a result, different classes, cities, or parts of the country can be compared, and norms or averages showing the performance of children in general can be obtained. Entire school systems can thus be "surveyed," and elaborate educational experiments can be carried on.

Various types of interpretative data may be furnished with the test. Norms showing the results for thousands of children in representative schools are usually though not always given. A teacher can thus see how her class compares with similar classes elsewhere. Standards may be included—statements, in terms of the test, of what *should* be attained. For example, by measuring the quality of handwriting required of clerks in business houses, it was found that "quality 60" on the Ayres Gettysburg Handwriting Scale was adequate for all practical purposes; "quality 60" thus becomes a goal which pupils should reach but beyond which it is hardly profitable to go. Such standards are evidently highly desirable wherever they are possible. They are common in testing vocational proficiency; for example, a student in stenography may be required to handle 100 words a minute if she is to qualify for a job. Within a school, standards for admission to a "fast" section may be worked out. A college student may be given credit for freshman English if he reaches a certain standard on a series of English tests; passing all the items on a test in minimum essentials in English grammar may be made prerequisite to full admission to a beginning course in French.

Scoring and interpretative data may be such that special inferences may be drawn. Thus a test on social beliefs has subscores and norms as to liberalism or conservatism in point of view, also uncertainty and consistency in belief, with reference to six types of issue: democracy, economic relationship, labor and unemployment, race, nationalism, and militarism. A well-known interest test (Strong) has such methods of scoring and data that a given student's pattern of interests can be shown, for example, to be in the direction of engineering rather than law; personality tests may have subscores and norms for introversion or other traits.

Usually data regarding reliability and validity are included. To determine reliability, the common method is to give two forms of the same test to a considerable number of pupils. If the correlation between the two forms is high (or probable error of the score low) the test is considered reliable. A reliability coefficient of .90 or more is to be hoped for.

A reliable test is one which agrees with itself. Validity is determined by finding out whether the test scores agree with some independent criterion—usually some type of real-life testing such as was mentioned at the beginning of this chapter. As was said there, the validity of a test in punctuation or grammar may be checked by comparing scores with errors made by the same pupils in their written work. Validity of a test of social beliefs was checked by comparing test scores with the judgment of teachers who knew the pupils well, with findings of interviews in the course in which these beliefs were touched upon, and with anecdotal records in which these beliefs were shown by revealing acts. Validity of a test of personality may be shown by the extent to which it differentiates student leaders from students who have been referred to a student consultation service because of maladjustment.

Finally, such tests are carefully planned in order to save the teacher time and trouble and to be a convenience to her. The fact that the questions are already prepared and printed is in itself obviously a great help. Directions to the pupils are printed on the test blank—directions which have been carefully tried out to make certain that they are adequate. Every detail of the test is planned so as to make its use easy. Scoring keys are so printed as to reduce eyework in grading, and methods by which the pupils can grade their own papers may be included. The blanks are of a convenient size for handling. Special record sheets are provided so that results can be easily and accurately tabulated. There are tables of norms and other interpretative materials so that it is easy to interpret the results.

Thus, tests of two or three hundred questions can be taken by a class in forty minutes, a paper scored in three minutes, and results tabulated in ten minutes. The findings of a survey of an entire school system can be assembled in a few days of simple clerical labor. Such convenience was undreamed of thirty years ago. Increasingly, tests are being scored by machine.

Types of Standard Tests.—There are now tests covering various phases of schoolwork from the first grade through college in reading, foreign language, shorthand, science, agriculture, music, art. And there are batteries of tests that include in one formidable examination material on many subjects. There are also tests in current events, general culture, critical thinking, the nature of proof, beliefs about school life, personal and social adjustment. Numerous tests of vocational aptitude or training have been devised for use in the business world. As mentioned in an earlier chapter, there are many tests of general and special ability, and of attitudes, interests, character traits, and aesthetic development. Tests may be of the pencil-and-paper type or they may involve doing things—putting together mechanical devices, using tools, or displaying other skills.

Though standard tests are thus varied, it is nevertheless possible roughly to classify those under special consideration here—tests for determining the results of schooling—as either general, diagnostic, or instructional in scope and purpose.[6]

General tests aim to cover in a general way (somewhat after the fashion of a final examination) a whole subject or section of a subject. Thus the Compass Survey Test in arithmetic includes some exercises in addition, subtraction, multiplication, and division of whole numbers, and common and decimal fractions, also some work with denominate numbers, and some problems. Not enough work on any one of these topics, such as division, is included to give an adequate and reliable indication of the extent of a pupil's knowledge of that topic—much less to make it possible to diagnose any special difficulty which he may have. But there is enough so that the total score gives a reasonably good measure of his total ability in arithmetic.

Such a test is useful to a superintendent who wants to know how the pupils in his elementary schools are progressing in arithmetic as compared to the norms for the test. It is useful also to the supervisor who wishes to compare the teaching technique used in one class with that used in another, because she is interested in the standing of the classes as wholes, rather than in the ratings of each child within the groups. The teacher also may find use for a general test at the beginning and end of a semester's work. Suppose that she teaches the fourth grade and on the opening day of school finds 38 more or less eager children awaiting her instruction. The best start she can make is to find out what they already know so that she can tell where to begin her work. She therefore gives general tests in reading, handwriting, spelling, and arithmetic, and finds that her group does well enough in arithmetic and spelling but that their reading is very poor, while their handwriting varies all the way from complete illegibility to a quality well above the standards of adult need mentioned in the preceding section. From this preliminary survey she finds those children who are in need of individual attention in each subject and those who are already so advanced that they will require special assignments to keep them from being utterly bored, and she also finds out in which subjects more detailed testing is needed. In the instance above it is clear that she especially needs to know more about the children's inabilities in reading.

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[6] The only way to gain an understanding of tests is to study actual sample sets of representative test materials. The instructor is therefore urged to have such samples available and to keep in touch with new materials which may appear. She should have the latest lists of such publishers as the World Book Company (Yonkers, N. Y.), The Public School Publishing Company (Bloomington, Ill.), The Teachers College Bureau of Publications (Columbia University, New York City), and the Cooperative Test Service (The Psychological Corporation, New York City). The *Mental Measurements Yearbooks* issued by O. K. Buros (Highland Park, N. J.) will be found of great value.

Usually the first tests in a field are of the general type; there are in consequence general tests in almost all the school subjects. All too often these tests are based on textbook analyses rather than more fundamental curricular research, but in any case the material is usually better selected and more carefully arranged than any test which the teacher could make.

Although a general test is useful to a teacher in the above ways, it is particularly useful to the superintendent, principal, or supervisor. The "teacher's test" is the diagnostic test. These tests are highly analytical; they aim especially to diagnose a pupil's difficulties so that his teacher will know how to remedy them. James may be having trouble in addition in arithmetic because he does not know how to carry. The addition tests of the Compass Diagnostic Series include a subtest dealing especially with carrying; and if this test is given to the class, the teacher can readily locate all the youngsters who do not know how to carry. If James' difficulty with addition continues even after he is given help in carrying, she may use the Buswell-John Individual Diagnostic Test. This consists of a series of examples carefully chosen so as to reveal any obscure misunderstandings or faulty procedures which may be hampering a pupil. The teacher then keeps James after school for a few minutes and has him "work out loud" the problems in addition. She may find that he knows only a few of the addition combinations and most of the time counts on his fingers instead of really adding. She then knows that she must go back and teach him the addition combinations he does not know. Without the tests she might not discover his difficulties at all, or at least not until well into the semester's work; meanwhile James has been habituating himself in these bad habits, which he probably does not recognize as such, and is becoming more and more discouraged. With the tests she can find out during the first two weeks of school just what is wrong, and set about at once to deal with the trouble. Good diagnostic tests are the prime means by which a teacher can solve her instructional problems.

Since to make a good diagnostic test requires extensive analytical research of pupil difficulties in a subject, there are unfortunately as yet relatively few such instruments. The tests in application of principles and beliefs in the social studies mentioned earlier in this section are interesting examples of diagnostic tests at the secondary school level.

If the diagnostic tests are called the teacher's tests, the instructional or practice tests may be called the tests of special significance for the pupil. They are an attempt to use the test method so as to provide maximal opportunity for pupil self-direction—to provide each pupil with means for systematic self-diagnosis and self-instruction. Historically important and largely representative of these are the Courtis Practice Tests in Arithmetic. The series is begun by having the class take a test covering the first twelve lessons. The pupils who do this work correctly skip these first twelve lessons. Those who do not "pass" must work on each lesson until they can do it correctly in the time allotted; if after four days' trial they still do not pass, they are to ask the teacher to find out their trouble.

Such materials evidently provide that each pupil shall work on that portion of the subject matter with which he has difficulty. Certain practice series begin with a diagnostic test keyed to the practice exercises so that a pupil can turn at once to the exercises involving topics on which he made errors in the initial test. Each pupil progresses at his own rate; each one knows his progress and knows what he has yet to do; some series require that each one keep a graph of his progress. In fact, the good practice test outfits may in many respects be called the finest fruit of the testing movement, for they make available *to the pupil,* in compact and maximally usable form, the values of tests and the results of research on the curriculum and the learning process.

The teacher should appreciate how helpful materials of this type may become, once she has come to an understanding of the nature of learning and the extraordinary individuality of instructional problems as revealed by the study of each pupil and a diagnosis of his difficulties. It will perhaps seem as though she must teach each child individually and be in several places at once. The good instructional practice test system brings order—even leisure—out of this chaos, for after the students become familiar with the procedure they largely look after themselves. Only when they are "stuck" do they call upon the teacher; she has leisure to help them; she instructs each pupil only in that in which he needs help. The pupil learns self-direction and system in work, and has the thrill of known progress and a definite goal. The good practice test system might be described as a making over of educational science. Practice materials have thus far been developed almost exclusively in the "drill" subjects. But there appears to be no good reason why analogous materials should not be developed in all subjects, with provision for socialization and the other features desired in progressive schools.

The Measurement of Attitudes, Character Traits, and Social Adjustment.—Throughout Part One of this volume the idea was stressed that the school should feel itself responsible not only for a pupil's knowledge of arithmetic or French but also for his interests, his attitudes toward social problems, his social and emotional adjustment, his character traits. The chief reason why schools have not as a rule recognized this responsibility is probably the fact that the means for determining such characteristics have not been generally available, and consequently the fact that the schools *can* educate in these respects also has not yet been generally recognized. As indicated earlier, however, standard tests of such traits are now available and are being constantly bettered. Before many years the schools may be measuring progress in broad-mindedness, honesty, and social adjustment almost as accurately as they now measure gains in arithmetic or French vocabulary—and, rightly, with greater concern.

While the standardized tests suggested here and earlier may seem simple and easy for a teacher to copy, they do afford her two advantages. In the first place, such tests are often difficult and time-consuming to make. Thus if a teacher wishes to test such a trait as "cooperativeness," she will have to describe or set up a series of situations and list a series of alternative responses to each; this must be done carefully so that only the trait of cooperativeness, and not such things as familiarity with the situation, vocabulary, etc., determine the score. The expert can assist here by searching for and trying out sample situations until a final list of discriminative items remains; the teacher can use the test with some assurance that it measures what she hopes to measure. A second value of standardized tests in these areas is that norms are provided so that a teacher can interpret the meaning of a given pupil's score. Thus a teacher may note that a boy helps with the family chores but he pays no attention to his interference in playing football; she will not know without norms whether this is the expected social adjustment for his age.

Various interest questionnaires and related devices have been developed. Some consist of long lists of games and amusements, the pupil being asked to check those he likes or has indulged in. He may also be asked to check on a list of books those he has read, or the magazines and sections of the newspaper he reads regularly. Books and magazines may be classified as to their maturity level, and evidence of the students' maturity of interests obtained. Movies which have been seen and liked may be indicated, and the radio programs heard or preferred. Various types or characteristics of books and movies may be listed, and the pupil asked to check those he prefers. Lists of vocations may be presented for checking as to preference. The chapter on interests was based largely on material obtained by these methods. Such instruments are still largely in the experimental stage. But if one purpose of the school is the development of desirable interests, the means for determining the effectiveness of educational efforts in this direction are much needed.

As mentioned in Chapter IX, much work has been done on measurement of attitudes. The usual attitude scale is simple and straightforward in nature, consisting of a sheet on which are printed brief statements of different attitudes toward some important issue. Thus a scale on labor unions includes various statements, from very favorable to very hostile. The person taking the test checks the statements which indicate his attitude, and from his marking is derived a score which is a measure of his favoring or hostility. Evidently studies investigating attitudes and the effects of schooling upon them are badly needed. What, for instance, are the effects of reading historical novels, or of history as now commonly taught, upon attitudes?

Tests of social adjustment are now available and are useful. They may consist of such questions as "Are you embarrassed if you have greeted a stranger whom you have mistaken for an acquaintance? Very much; somewhat; not at all." The students may be asked to check things they like to do, the issue being the extent of their social interests, or to check things which annoy them, the issue being the extent of their social sensitivity or irritability. Evidence may be sought, by means of a check list, on a person's tendency toward introversion or extroversion. Real-life tests and sociometric methods such as have been described earlier in this chapter and in the chapters on social development may here be extremely useful. But many methods must be tried, and will be needed. If, as was emphasized in an earlier chapter, a major objective of the school should be the development of a satisfactory social adjustment and social competency, means for the measurement of these outcomes and the diagnosing of difficulties are needed.

The most significant tests of character traits are the "experimental real-life" tests involving things to do, games to play, and activities of various sorts to engage in which were described earlier. Ingenious special methods of studying character and personality are being experimented with. Informal little tests for young children may involve blocking what they are doing to see how they react to interference, or giving opportunity to break toy balloons to see how much aggressiveness and destructiveness they show (28).

Within recent years certain methods of personality analysis known as projective techniques have been used as means of analyzing personality patterns. Characteristic of these methods is the provision, in a relatively unstructured situation, of play materials which permit underlying personality characteristics to find expression. The child may be shown ink blots and asked to describe what he sees, or he may be given paints or cold cream which he can unrestrictedly manipulate with his hands, or he may do as he wishes with small life-like toys. Qualitative analysis of his behavior provides cues as to the degree and nature of his inhibitions, originality, and emotional patterns. Similarly a child's reactions in group play situations and in individual play fantasies indicate other important aspects of personality development (28).

While these techniques and their interpretation are usually too complex for use by the average teacher, the principle may be suggestive of possible opportunities for observation in and out of the classroom. For instance, asking children for a free expression of their wishes, or having them write original stories, or providing opportunities for them to talk freely will tend to indicate many of their interests, frustrations, and levels of development. Thus in a fourth grade recently observed by one of the writers the children's story writing emphasized "mystery stories" characterized by a series of frustrating walls, bars, doors, and villains and by a lack of plot. Such details show, typically for that age, the effect of radio, the love of excitement, and the preoccupation with trying to understand attempts to control their behavior. Also indicated is the unorganized mode of thinking then current. Knowledge of these things should aid the teacher in better planning class activities suited to the maturation level of her pupils.

USE OF METHODS OF APPRAISAL AND DIAGNOSIS IN IMPROVING LEARNING

Tests seem to be regarded by certain enthusiasts as having a peculiar potency such that the mere giving of them, without any carefully planned use of the results, produces some vague but substantial educational good. The grading of examinations is regarded by most teachers as among the most disagreeable of educational chores; questions are often carelessly phrased, and grading is perfunctory or not really done at all. As a result, both tests and examinations have come into bad repute in many quarters. By now it should be clear that in this volume the point of view is far otherwise; such instruments are regarded as essential educational tools, vital to effective teaching. The specific question now arises as to the outstanding educational services which these instruments may render. Various uses have been mentioned, but three points deserve further emphasis here.

Tests and Examinations as Statements of Objectives.—First of all, tests and examinations often operate both to stimulate pupil effort and to serve as immediate objectives. To "prepare for an examination" is a common student activity. The quality of the tests and examinations used in a class consequently has no small influence on the quality of the work of that class. Examinations should put before one's pupils, in pointed fashion, major issues of the subject; the tests used should be based as far as possible on curricular research, and should express in concrete form the objectives of the subject dealt with. If it is desired that students should not merely memorize facts but should acquire skill in judgment and thinking with reference to the subject matter concerned, the examinations and tests should consist of questions harmonious with this objective. It is sometimes said that students should aim at the mastery of a subject and not think of examinations. As a matter of fact, however, the probable nature of the examinations does influence a student greatly, and if the examinations are of the right sort, this influence will be largely healthy. In the "Chicago Plan" and in graduate schools, this influence is frankly recognized. The much broader and more subtle methods of appraisal now available as compared with the tests of even a decade ago may make teaching for the tests a broadening rather than narrowing experience for the average teacher! To teach for the real-life outcomes discussed in the first part of this chapter, and for the interests, attitudes, and character traits mentioned—this task would indeed give a broader program than most schools have.

If, as is usually desirable but all too rarely the case, an examination is followed by a "make-up" so that the student may use the results of his test or examination as a basis for better-directed study for a second effort, the first test specifically directs his further learning. Moreover, if the teacher will keep in mind this possible use of her questions, she will formulate them more carefully and discuss results more adequately with reference to this influence.

Examinations and Tests as a Means for the Orientation of Both Teacher and Pupil.—As was emphasized in the chapters on the control of learning, it is essential that both teacher and pupils be informed as to progress and goal. Only as the teacher is informed can she adequately guide learning, and only in proportion as a pupil is informed will he be adequately motivated and able to work intelligently. Where any pupil is having difficulty in his work, the test or examination should serve to explicate the nature of his difficulty and suggest a means for its remedy. Diagnostic tools are as necessary to the teacher as diagnostic methods are to the physician. The teacher should regard diagnosis as one of her major functions, and should consider herself skilled largely in proportion as she is an expert diagnostician.

It follows that, within reasonable limits, the more tests and examinations, the more efficient the learning. It also follows that test and examination papers should always be returned to the pupils, the results carefully explained, and individual questions so explicitly graded that the students can locate and understand their mistakes. For intelligent learning, informing the pupils regarding their work is essential. If the real-life tests and the tests of personality can be brought to the point where both teacher and pupil can be informed about progress in the development of desirable social adjustments, interests and attitudes —this would be splendid. Increasingly tests are helping thus to show progress and even to locate difficulties in the growth of such abilities and traits.

Tests and Examinations as Educational Experiences.—It was said above that tests and examinations should never be given merely for the purpose of giving them. That statement must be qualified to this extent: a good test or examination should in itself be a profitable educational experience. A systematic series of information questions of the objective type may force the pupil to an inventory of his knowledge —a valuable procedure. A finely conceived essay-type examination may set him on an entirely new line of thought which had not occurred to him before. And a good thought question of the objective type may present to him in pointed fashion various alternatives among which he must choose, and the choice may stimulate profitable thinking. A student may "learn more" in a stimulating, challenging examination than in a week of classwork. And the newer tests of social adjustment, of actual ability to apply and do, of attitudes and interest and appreciation may indeed be fascinating and highly educative experiences.

SUMMARY

This chapter has covered a variety of means of appraisal, from elaborate machine-scored tests to counts of the salads children chose for lunch, and appraisals in many fields from first-grade reading to graduate students' appreciation of poetry or attitudes toward democracy. All this can be summarized briefly, however, as follows:

1. It should be clear in the first place that methods for the appraisal and direction of learning must be planned with reference to the objectives and desired outcomes of the school program. If a teacher does not keep objectives constantly in mind she may make quizzes superficial, and never find how she is failing to accomplish very important matters; she may give tests in useless detail, and never realize that her pupils never reach a real understanding of vital problems or become able to do even simple necessary skills. However, a teacher must not become hypnotized by objectives; there must be a constant alertness to all possible significant outcomes.

2. Schools do not exist smugly for their own particular self-contained purposes. Their purpose is so to influence children that they will be more efficient, happy, useful individuals both in school and out, and in the future be better in consequence of their having been to school. Accordingly, the best test of the efficiency of a school is what those who attend it do in "real" situations, in neighborhood and home as well as school, and in their future careers as wage earners and citizens. Such appraisals are often difficult; his teacher cannot wait twenty years to find out how good a citizen this sixth-grade boy will be, if she is trying to guide his learning now. Nevertheless, much can be done by way of real-life appraisal; in fact, here seems to be a greatly neglected opportunity. The teacher can find out how a sixth-grade boy behaves as a citizen in his own small society, not only with his classmates in the schoolroom but on the playground, in the neighborhood, and at home. She can find out what his classmates think of him; she can find out his tastes in use of leisure time. She can even set up experimental real-life situations to see how honest, public-spirited, or efficient he is in some reasonably genuine undertaking.

3. However, all appraisals that a teacher needs to make cannot readily be made in this way. Old educational stand-bys may be used—essay-type examinations, teacher-made objective tests, oral recitations and quizzes, or similar methods of finding out what a youngster knows and feels and can do. Such procedures are usually unreliable; they al-

most always put undue emphasis on the particular teacher's interests and are inadequate as to scope and range of appraisal, but they can serve valuably in keeping her in close touch with her pupils and her success in doing the particular things she is trying to do.

4. Standard tests tend to avoid certain of these difficulties. The best of them are carefully formulated on the basis of curricular research to be sure that they do cover desired objectives. They are carefully constructed so that grading may be reliable. They are constructed with great ingenuity so that grading may be easy. The results have been carefully investigated with reference to the extent to which the tests do really measure what they are supposed to measure. Recently they have shown great ingenuity indeed in covering objectives heretofore not touched upon: attitudes, character traits, ability to think and appreciate.

5. All these various methods of appraisal are essential for effective teaching and even more for effective learning. They make objectives clear by showing goals for teacher and pupil—or at least they should do so. They make possible accurate knowledge of progress toward these goals. They may help in locating difficulties and orienting both teacher and pupil with reference to the task and methods of dealing with it. They may themselves be educational experiences well worth attempting and enjoyable in the doing—may be essentially projects refined and artfully constructed to further learning.

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CHAPTER XV

The Hygiene of Work

An experienced teacher well knows that toward the end of a school day the children tend to become restless, irritable, hard to control, easily distracted, and wasteful of time. She realizes that, as the school day and especially the school week wear on, she herself becomes tired and less effective than when fresh and rested. The problem of fatigue is, then, important for both pupil and teacher,[1] but happily it is a problem which, upon analysis, is found to be solvable in considerable degree. And it can be treated briefly, since most of the factors involved have already been discussed and need be only referred to here.

MUSCULAR STRAIN AND PHYSICAL DISCOMFORT AS CAUSES OF FATIGUE IN SCHOOL

It must first be made clear that what seems to be a general tiredness often has, as a major component, a muscular fatigue or strain which can often be avoided. Factors causing physical discomfort may be important. Moreover, the physical condition of a pupil must be considered if he appears especially susceptible to fatigue. Teachers, vice principals, and deans often assume that if a student is fatigued the logical remedy is to have him take less work, or rest. The first two sections of this chapter will point out that what is often needed is rather some change in the condition or nature of the schoolwork or in certain background circumstances.

Eyestrain and Fatigue.—Naturally first in any list of factors causing fatigue in school is eyestrain, which is often not recognized for what it is, but is felt rather as a general tiredness and discomfort. Schools all too often have poor lighting; the writers have seen high school study halls in which reading was practically impossible in certain parts of the room on cloudy days. Seats farthest from the window often receive only one-tenth the amount of light there is at seats nearest the window. The conventional shade, which pulls down from the top of the window, further exaggerates such problems by cutting down on the most direct source of light for the dark side of the room and having little effect on the seats near the window. Shades which pull up and down from the middle of the window, or (even better) indirect lighting from north windows should be provided. One study of 4714 pupils in 154 rooms showed that pupils near the windows in conventional classrooms tended to do better than pupils on the dark side of the room, but in rooms where the lighting was equalized this difference in grades did not exist (4). There is also some evidence that when illumination is kept fairly constant by automatically varying the amount of artificial light so as to compensate for changes in daylight illumination, there is less eyestrain and improved scholarship. Thus, in one study of two fourth grades equal in intelligence, the room which had controlled indirect lighting of between 12 and 15 foot-candles made gains of 16 and 21 per cent on two tests of reading ability, whereas the room with regular lighting had a loss of 2 per cent and a gain of 9 per cent on these same tests (20).

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[1] Fatigue is here used in the broad popular meaning to refer to any condition making work either difficult or distasteful; the problem of fatigue in school is thus broad and practical.

The angle of lighting is also important. Lights hung from cords so as to shine in the pupils' eyes as they look at the blackboard will cause fatigue. Poorly planned windows may cause a shadow to fall across a child's work as he writes.[2] The walls or blackboard may have such a glaring finish that at times light is reflected so badly as to prevent reading and cause fatigue.

The important point in lighting is to have adequate illumination (over 5 foot-candles), well distributed, of fairly constant intensity, and from such an angle that light does not shine directly into the eyes. Wall and paper surfaces should have a dull finish so as to reduce glare. Points of little importance for reading work in school are the color of the light and the amount of lighting above a reasonable minimum (about 20 foot-candles) (36, 40).

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[2] Teachers should keep in mind the special problems presented by the left-handed child who is forced to work in a "right-handed" environment. The left-handed child should have the light come over his right shoulder, not his left, or he will find a shadow in the way when he writes. Moreover, the teacher should appreciate that there is nothing sacred about any particular slant or method in handwriting and should carefully avoid forcing the "southpaw" into techniques devised for right-handers. To avoid possible serious strain (visual, manual, or postural), it is usually best to allow these children to experiment with methods in writing until they find something that is comfortable and legible. Forcing a child to change hands often not only disturbs his muscular adjustments but subjects him to such continued strain that serious nervous conditions may develop—he may begin to stutter, be awkward, or feel inferior and peculiar. The teacher should give careful thought to the problems presented by a left-handed child.

Studies of the lighting in students' rooms have found marked deficiencies. In one study at the University of Illinois, barely 5 per cent of the lights used by students could be considered good (16). The male students preferred gooseneck lamps which produce a glare of light on the desk top and, if no other lights are on, leave the rest of the room in dark contrast. The women usually had lights which could be classified only as "miscellaneous" but which were generally characterized by cute shapes, opaque shades, tassels, and poor illumination.

The eyes of the children may need attention. While most schoolwork may be accomplished in spite of sensory defects, such deficiencies cause the pupil to strain and so use up his energies more quickly. The emotional strain from the frustration of not being able to see clearly should not be overlooked. The fact that good readers have as many eye defects as poor readers does not prove that eyestrain is not serious; the good reader may compensate for his deficiency but at great cost of energy. Eye defects should be corrected.

There are many styles and sizes of print, and the format of the page may have many variations. Research has shown, however, that most of the common styles and sizes of type are about equally legible under good conditions of illumination. Black print on a dull-finish white or buff paper provides maximum contrast. Big print should be used in the early grades not so much because of eyestrain as for ease in the child's keeping his place and because the few words on a page make it easier to read several pages before becoming fatigued. Psychologically this is good motivation.

Muscular Strain Involved in Writing and Similar Tasks.—Only toward the end of a final examination or similar ordeal are most college students in a condition to have any real appreciation of the strain often put upon school children by certain school tasks, such as learning to write, especially writing with ink and using one of the abominable scratchy steel pens often supplied by schools. Drawing, map-making, and handicraft may also be very tiring if the periods are too long and if either the teacher or the pupil himself has too high standards. Copying material from the board is likewise fatiguing. Large-muscle activity is the natural and healthy thing for children; the fine coordinations of small-muscle groups involved in such work as the above are extremely difficult. Eyestrain may also be involved, and also postural fatigue, which will be mentioned shortly. Many teachers have little appreciation of the total discomfort such work involves; they attribute to natural perverseness the restlessness and irritability which the pupils often develop. Teachers sometimes make cruelly unnecessary requirements which greatly aggravate these difficulties; they may impose unnecessary standards of neatness and have compositions copied over and over, or insist upon some very special form in written work.

Problems of Postural Fatigue.—The sedentary character of the work of the average school presents multiple problems of health and fatigue. For an active youngster to sit still for any length of time requires a fatiguing effort. To maintain a sitting posture involves the continuous use of certain muscles which in a child become easily fatigued; minor spinal curvatures or other unfortunate results may follow. If his desk or chair is not the right size for him, these difficulties will be multiplied. One state survey showed that 87 per cent of the desks were too high for the children when seated and 56 per cent of the seats were also too high; the posture of 51 per cent of the children was bad (13). A teacher will be well repaid by the decrease of restlessness and irritability in her class if she will help each child to find a comfortable posture for his work. If the seats are not adjustable she may have very short children sit on a cushion to avoid any strain on chest and back muscles in working at the desks. If a child is "oversize" for the equipment, a table may be put on blocks of wood so as to be better adjusted to him.[8] Marked improvements have been made in the design of school equipment. Chairs adjustable for height, distance from table, and back support permit comfortable sitting, and movable equipment permits functional arrangements which eliminate much twisting and turning. But the problem of getting the teacher to make full use of these improvements still remains.

Work that requires the pupil to sit very still and carefully coordinate eye, hand, and total position, as in drawing or writing, intensifies all these problems; vivid evidence of this is seen in the twisting and squirming of children who are learning to write. Furthermore, whenever children work hard there are diffuse muscular tensions which tend to increase with the difficulty of the task, especially if there is some uncertainty as to what is to be done, or some emotional element is present. The restlessness is most conspicuous at the beginning of a period of work, and it gradually diminishes if progress is made; but if there is no progress, the tensions usually increase. Classroom activities which permit the pupils to talk and move about the room do much to relieve such tensions.

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[8] This problem is by no means confined to elementary schools. The seats provided in most high schools are of uniform size and unadjustable, despite the fact that in the seventh to tenth grades the range in the size of the pupils is very great. No thought seems to be taken for the pupils' comfort; only the frequent change of classes saves the situation.

Conditions in the Classroom Causing Fatigue.—Emphasis has been put upon the importance of adequate lighting and satisfactory seating if schoolwork is to go forward satisfactorily. But other conditions are also important. The fact that 42 per cent of American school buildings were erected before 1900—long before the science of lighting, noise control, and functional arrangement—would indicate that many poor conditions exist.

> Even in the newer schools all may not be well. One of the writers remembers visiting, one May morning some years ago, a room in a new school building with an elaborate ventilating system which "would not work unless the windows were kept closed." The school had no baths, but there was a good gymnasium from which the pupils had just come, hot and sweaty. The thermometer registered 84. The teacher complained wearily that she could not keep the children interested in their work. One study in industry showed that an increase in temperature from 68° to 75° caused a 15 per cent decrease in physical work; while there is some evidence that mental work will not be as greatly affected, the discomfort of a high temperature presumably does have an effect (9). Thus pupils doing arithmetic and spelling tests in temperatures of 70, 75, and 80 degrees did their best at 70 degrees (11).

Ventilation is important for both comfort and health. The problem is especially important in schools because of the extended time and closeness of contact of teacher and pupils. For instance, when 2517 samples of air were taken from many places in New York City and analyzed for throat infection streptococci, the schools topped the list in total number per cubic foot and in the percentage of positive samples (24). As one means of improving ventilation, many schools circulate and recirculate the air by mechanical means. A study of the U. S. Department of Health, however, showed that 3 per cent of about 1500 pupils in such mechanically ventilated schools were absent because of respiratory diseases, whereas only 1.8 per cent were absent for this reason in schools using open windows. Considering lengthy absences (three days or longer) alone, there were 359 absences from schools with recirculated air to 133 absences in the "open-window" schools (7). But the total problem is complex, since other conditions may not have been entirely equal, i.e., nutrition, health habits, etc.

Undue noise is fatiguing (17). It is strange how many city schools are at street-car intersections. It is estimated that 30 per cent of New York City schoolrooms are rendered almost useless because of outside street noises (8). In crowded schools two rooms have been made out of one by the simple expedient of running a six-foot partition down the middle; recitations go on on both sides at the same time. The pupils may seem to adjust to such conditions, but there is good reason to believe that it is at the cost of an extra expenditure of energy, that more errors may be made, and that irritability is increased. In one experiment (14), students took one form of an intelligence test under regular conditions and another form while bells and buzzers rang, lights flashed, barrels were rolled about on the next floor above, a large gong was hit, etc. While there was not a reliable difference in the group averages under the two conditions, the students' reports and their behavior indicated that they were much more fatigued by the noisy conditions. Similarly a study of the effect of noise on typing showed that after an initial period of adjustment, skill was just about as high but the keys were hit much harder and the students' breathing rate was faster (23).

The effect of some of these conditions on the teacher's health should not be overlooked. The teacher naturally wishes to maintain her health; as will be shown later in this chapter, the teacher in poor health is less effective. When 5150 teachers were asked to indicate the things in the school environment which were *most injurious* to their health, the following six items were at the top of the list: noise outside the classroom, defective ventilation, cold drafty rooms, lack of comfortable rest rooms, dust in room, and improper lighting (24). Class size may also affect teacher health and outlook. For instance, in one study of 1627 teachers those who judged themselves to be in "chronic ill health" had classes 7 per cent larger than those who judged themselves to be in "excellent health," and those who said they "did not enjoy teaching" had classes 7 per cent larger than those who said they did "enjoy teaching" (24).

Physical Condition and Fatigability.—General physical condition may obviously be expected to affect an individual's capacity for consistent work in school. An underweight and malnourished child or a pupil suffering from a focal infection is far more susceptible to fatigue than a child with greater vitality. As was mentioned in the third chapter, one of the outstanding characteristics of ill health is a quick fatigability which may show itself in a general collapse of efficiency as the day wears on, in misbehavior of practically any kind, or in daydreaming and inattention. These manifestations are more likely than not to be merely the efforts of a young and unsophisticated organism to say that it is tired.

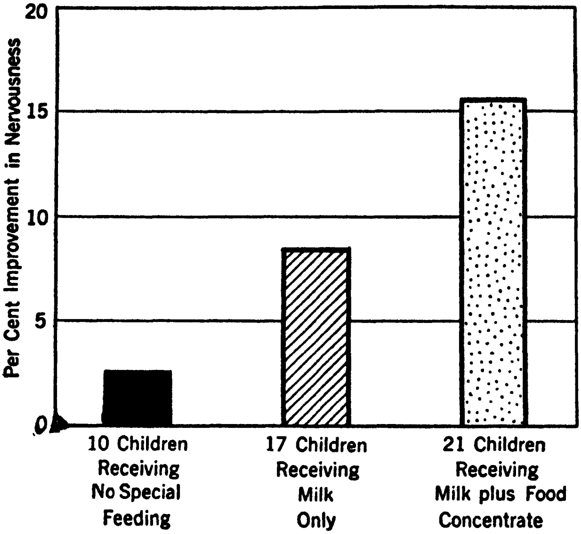

CHART 74.—Improvement in nervousness after special feeding for two weeks. (From Laird and others [18].)

In one interesting experiment, the most nervous children in Grades 1, 3, and 5 of three elementary schools were determined by use of an elaborate rating scale. These 53 children were then divided into three groups. One received a special feeding of milk each day; another, a special feeding of milk plus food concentrate; the third group played with toys instead of receiving food. After two weeks the teachers again rated the children for nervousness. It will be noted in Chart 74 that the special feeding, especially with the added food concentrate, reduced nervousness. In determining nervousness, each child was judged among other things on the degree to which he fatigued easily; this trait showed one of the largest of the gains as a result of the special feeding program (18).

In another study 79 children characterized by their teachers as quickly fatigued and as tense and nervous but otherwise all right in physical health were given a chance to rest at eleven o'clock in the morning and again just before their evening meal. As a result, 30 made entirely satisfactory adjustments, 32 made very noticeable improvement, 10 made slight but noticeable improvement, and only 7 seemed not to be benefited (32).

The pupil who works outside of school hours or comes from a crowded home where he is overstimulated and does not get enough sleep is likely to start the school day not only already somewhat weary but with a mind disturbed by the pressure of non-school duties, interests, or difficulties. In high school the round of outside activities, whether work or play, may sap an adolescent's energy and make him indifferent, easily distracted, or irritable in class. Thus, both physical conditions in the classroom and the physical condition of the pupil are important factors in fatigue.

BOREDOM, EMOTIONAL STRAIN, AND FATIGUE

The preceding section has discussed certain causes of fatigue which may be roughly classified as physical. Certain factors which may be called psychological (this term being used also in a very loose sense) must now be turned to.

Out-of-Date Curricula and Methods of Instruction as Causes of "Fatigue."—First to be stressed here is the obvious but often neglected fact that courses of study which do not make contact with pupil interests, and perfunctory methods of instruction cause weariness and restlessness in a class. Absurdly impractical problems in arithmetic, interminable factorings in algebra, the intrigues of long-dead politicians, and the intricacies of the Latin subjunctive tire pupils not chiefly because of the difficulty of these tasks but because they lack vital significance. Conservative and stupid curricula are a prime cause of "fatigue" in school.

It perhaps need hardly be mentioned that what is uninteresting and meaningless to one pupil may have much appeal to another. A good guidance program has this, among other values: it tends to prevent such fatigue as was mentioned in the above paragraph by seeing to it that students do not take work which is thus wearying. Furthermore, by guiding pupils away from work in which they will not succeed it also operates to prevent another cause of "fatigue" in school which will be mentioned again shortly—repeated failure.

Stupid teaching is also a cause of "fatigue." An alert, vigorous teacher can vivify almost any subject; a routine, colorless teacher will make it lifeless. But the problem is fundamentally much larger than the mere details of classroom manner and approach. From all that was said earlier about child nature and the learning process, it should be clear that conventional classroom procedures are in many respects essentially wrong, and that pupil weariness and restlessness are due in no small part to such methods. "Fatigue" is caused by the conflict between the sedentary life imposed by the conventional school and the healthy youngster's urge to activity, and also by the further conflict between the anti-social code of the conventional schoolroom and the normal child's sociability. Anyone observing children at play is quite as impressed by their unflagging energy as he is by their early fatigue and restlessness in school. When a youngster plays he is doing something significant to him, usually with other children. The school imposes upon an active, social organism a sedentary, largely non-social program. This point should not need further elaboration.

Emotional Strain and Fatigue.—As has been mentioned elsewhere, the differences in emotional tone and atmosphere between different classrooms are often striking. In some rooms things proceed in easy, friendly fashion; in others there is tenseness or hostility. Severe discipline based on fear—of explicit punishment, of sarcasm, of poor marks—causes a certain emotional tension which is fatiguing. The writers have seen schoolrooms in which normal activity was "frozen" because the teacher aroused terror. Moreover, any method of control which involves tension leads to a reaction of some sort somewhere—if not in school, then on the playground or at home.[4]

A high school teacher noticed that students coming to her classes who had been with a certain other teacher the previous hour were noisy, restless, inattentive, irritable, and apparently unable to do consistent work. Inquiry revealed that this other teacher had a simple and special technique for maintaining attention and discipline in class. She spoke in such a low voice that absolute quiet and rigid attention were necessary to hear her; and she was both a hard marker and bitingly sarcastic, so that the students did not dare miss anything she said. She achieved the traditional goal of a quiet, apparently spellbound class. But after being in her class for an hour, the students felt that they simply had to move about, "blow off steam," relax; and little could be done with them for the next twenty minutes or so until they had had a chance to recuperate.

The effects of class atmosphere deserve experimental study. Research has shown that in factories there are more accidents under irritable than under affable foremen. Do pupils make more mistakes under a sarcastic teacher? What is the effect on the next hour's work? Systematic investigation of such a problem should not be really difficult, and it is suggested to school administrators and supervisors as a practical problem for field investigation—perhaps one which would make a good thesis.

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[4] Some years ago there was a psychologically sound series of cartoons by Goldberg entitled, "Then he went home and took it out on his wife." Children may take out, on the school or the teacher, tensions generated at home, and vice versa.

Schoolwork may be adversely affected and "fatigue" increased by the distraction of outside activities more interesting than classwork. When pupils are paying furtive attention to some topic foreign to the immediate lesson, less constructive work is usually done and restlessness increases—as illustrated by Friday afternoon behavior before a big school dance or game.

A more exact measure of the effect of separation from matters of greater interest than those available is provided by an interesting experiment with pre-school children (1). In this study 30 children were observed individually on two occasions: first, in a free-play situation during which they were to play without restriction with interesting toys; and second, in a frustrating situation during which the children were placed in the same room with the same toys as on the first occasion but were now also able to see some much more attractive but inaccessible toys. This was accomplished by replacing one of the walls of the original room with a wire net partition through which the children could easily see the toys but through which locomotion was impossible.

The nature of each child's play in both the free play and the frustration situation was rated on a 7-point constructiveness scale. The proportion of time spent at the barrier and in escape behavior was used as a measure of the degree of frustration. As a result of the frustration situation, play monologue and friendly conversation with the experimenter decreased, and the average complexity or constructiveness of play with accessible toys decreased until it was at the level of children 17 months younger in mental age. Moreover, the greater the strength of frustration, the more loss in constructiveness in play occurred. What then must be the effect on students' ability to study with football schedules, pictures on the study table, and talk or radio in the room!

Children are often distracted in their schoolwork by personal problems. Children from disrupted homes and those who are not acceptable to the other children in their play groups do not do as well in school as the average child. Such poor performance is due in part at least to the tensions aroused by these outside frustrating situations, concerning which the teacher is often unaware. Emotional tensions arising from chronic maladjustment of personality may also affect work efficiency. Studies of students, clerks, typists, and factory workers showed that those who are rated as most nervous tended to be erratic in their day-by-day production, less efficient, and less socially adaptable (6). Thus, only 28 per cent of students who made "A's" on examinations were found to have two or more nervous symptoms, but 60 per cent of the "D" students had two or more such symptoms. Acute emotional distress may cause fatigue phenomena varying from chronic weariness and distractibility or irritability to complete physical prostration.

THE EFFECTS OF CONTINUED MENTAL WORK UPON EFFICIENCY

This chapter is concerned with factors tending to interfere with effective continued schoolwork. The first section showed that certain factors which may be roughly classified as physical might operate in this way, such as poor lighting or injudicious school tasks causing eyestrain, excessive work involving difficult small-muscle coordinations, poor seating or ventilation causing physical discomfort, and poor health. The second section pointed out that various other factors roughly classifiable as psychological, such as curricula and methods with little appeal to pupils, or emotional strain, might have this effect. There remains the question as to whether, apart from or in addition to these factors, continued *mental* work reduces intellectual efficiency; that is, whether continued functioning causes fatigue of the central nervous system.

Continued Work and Efficiency.—The problem is evidently susceptible of experimental investigation. Chart 75 summarizes one study of it. Thirteen subjects carried on for long periods of time four different types of activities—i.e., continuous addition, sentence completion, judging of compositions, and intelligence tests. That is, a subject carried on each one of these activities continuously for a period of about five and a half hours or until he refused to work longer. It will be noted in the chart that the amount produced during such an extended work period may increase—i.e., intelligence—or decrease—i.e., addition—but all four experiments agree in showing that the feeling quality changes rather markedly toward distaste for the activity after such a period of work. Evidently the continuance of work affected efficiency in doing it very little. There was, however, a steady decrease in the interest or "satisfyingness" of the work; and toward the end, the work was decidedly distasteful (30).

The above results are typical of numerous studies. Several hours of continuous mental work, with maximum effort, cause a decrease of usually less than 10 per cent in the amount and quality of work done;

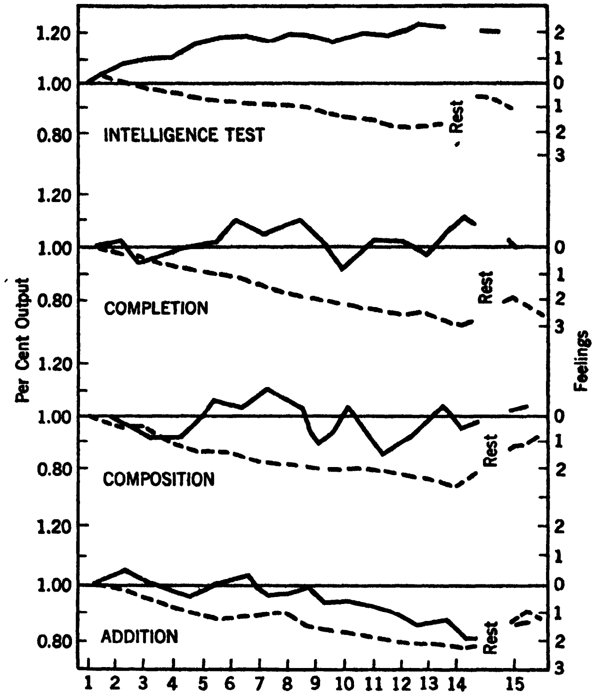

CHART 75.—The relation between output and feelings in four forms of mental work. Solid line represents output; dotted line, feelings record. (From Poffenberger [30].)

speed may increase. And these effects are temporary—they disappear after a rest of an hour or less. It is well known that continued muscular work uses up certain materials in the tissues and produces certain waste products; the result is a rather regular and pronounced decline in efficiency. There are also unpleasant feelings and even pain in the muscles which are being exercised, so that finally the work becomes unbearable and is stopped. Apparently mental activities involve less metabolism and less waste products, or the nervous system in this situation is more resistant.[5] Moreover, in considering the total problem of the hygiene of work in school it seems reasonable to assume that the possible effects of such work on the nervous system need not be regarded as likely to be serious.

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[5] In one striking and well-known experiment a graduate student worked continuously twelve hours a day for four days, doing mental multiplication of four-place by four-place numbers, such as 2618 times 7269. The last four examples on each day took over twice as long to do as the first four. But the work *was* continued throughout the twelve uninterrupted hours, and the work of the fourth day was better than that of the first day of the series.

The curve of "satisfyingness" in Chart 75 must not be forgotten, however. Work continued when it is distasteful may make that work repugnant; and distasteful work may cause wear and tear on the total system (might one say, on the disposition?) which brings various unfortunate results, particularly when maximal effort is put forth. Under ordinary circumstances, work beyond a certain degree of distastefulness is likely to be dropped, or carried forward only fitfully and inefficiently. The curve of satisfyingness and interest may probably be considered in large part a product of the factors of physical strain and interest mentioned in the first two sections of this chapter. The conclusion therefore seems reasonable that *if* these factors are taken care of, consistent work over any reasonable period of time may be considered not harmful (on the assumption, it should perhaps be added, that there is no such excessive motivation as would cause a later reaction). As a matter of fact, children at play and children working in a progressive school upon an interesting project may spend the better part of a morning in absorbed and happy devotion to some undertaking.

On set routine tasks it has been shown, both in school and in industry, that regular brief rest periods (perhaps every thirty minutes or so) are beneficial. The conclusion seems reasonable that the factors mentioned in the first two sections are largely involved here, and that such rest periods are much less necessary if the work is interesting and has in itself a considerable variety. Children working on an interesting project would resent being made to drop it and "rest" at frequent intervals.

Time of Day and Efficiency.—The assumption is common that children work better at certain times of the day than at others; accordingly the more difficult work, like arithmetic, is put in the morning, drawing in the afternoon, and so on. However, experimental work is in accord with Chart 75 in showing very little variation in efficiency. Chart 76 shows the efficiency of 532 pupils in doing addition at various times during the school day. There seems to be a slight "warming-up" period in the morning, but thereafter efficiency remains fairly level (35). These are results with high motivation. Under more ordinary school conditions there may be restlessness toward the end of the day, and lessened interest. Research in industry suggests such factors.

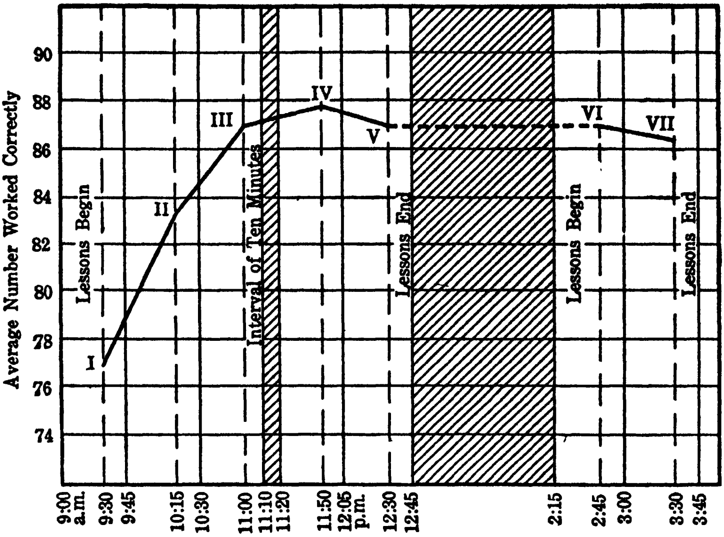

Chart 76.—Average work of 532 pupils. Changes of lesson are shown by continuous, and times of testing by interrupted, vertical lines. (From Stainer [35].)

Both because of the tendency for little children beginning school to fatigue quickly and because of crowded buildings, some schools have tried limiting the school period for the first and second grades to a half day. The question then naturally arises as to whether children learn as much on such a "reduced" schedule. One interesting study in a western state where 47 per cent of the first grades met only for half a day showed little difference to exist between half-day and full-day sessions. In this state-wide study school board minutes, superintendents' reports, and pupils' cumulative records were analyzed and various tests of accomplishment in schoolwork were administered. No consistent differences were found in percentage promoted or retarded, health records, or test results. The author does note that tests of personal and social development were not included so that the relative efficiency of the two time intervals as regards growth in social relationships is not known (12).

Not much evidence is available regarding variations through the school week and at different times in the school year. Research in industry would suggest the best work on Tuesday and Wednesday, and the poorest on Saturday, Friday, and Monday in the order named. Production and accident rates vary somewhat at different times of the year. But children in school and adults in industry are so different and in such different total situations that hardly any inferences with reference to school practice seem possible. The study from which Chart 76 is taken also included results of administering this same test in addition each Tuesday for twelve weeks. The average efficiency each week in this school is shown in Chart 77. It will be noted that efficiency increases as the term gets under way, with vacations tending to cause slight drops in efficiency (35). The gains through most of this period are presumably due to many factors—practice with tests, instruction, better work habits. The important point here is that even at the end of a twelve-week term there was no falling off in efficiency—though there was a drop after the brief vacation! Perhaps vacations are not so necessary as a safeguard against fatigue as is usually supposed. In fact, what little trial of "all-year" schools there has been has shown no ill effects of a school year of eleven months.

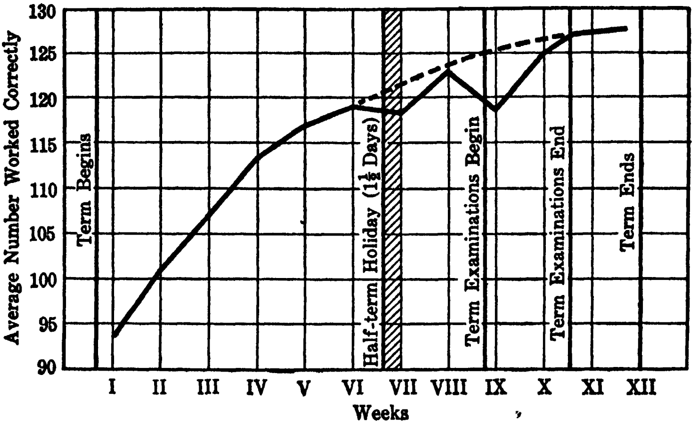

CHART 77.—Average rate of work of pupils at 11:05 A.M. on each Tuesday in a term. (From Stainer [35].)

Again it must be emphasized that the situation is complex. Children may be able to go to school more weeks or months without a drop in the efficiency of their work there. But vacations may nevertheless be desirable for other reasons—health, recreation, diversity of experience. Thus in a recent investigation by one of the writers the great majority of a large group of college students reported that they considered a summer spent in work or travel more worth while than a summer in school.

THE PRACTICAL APPROACH TO PROBLEMS OF FATIGUE IN SCHOOL

The reader may by now have sensed that the order of topics in this chapter is intended to indicate a suggested order of procedure which may well be used in any attack upon problems of fatigue in school. It is possible that a class or an individual pupil may be overworked—though even in this case the real nucleus of the difficulty may probably best be considered a matter more of emotional strain than of nervous exhaustion. But under ordinary circumstances there is no real overwork. In any case, attempts at a diagnosis of the situation should first consider other causes. Never should it be assumed, without consideration of the possible operation of these other causes, that the situation can be dealt with simply by lessening the amount of work or requiring rest..

First to be checked off is the possibility that physical conditions in the school may be causing strain or physical discomfort. The lighting may be poor, the desks uncomfortable, the ventilation inadequate. In the case of the tired child there should be careful investigation as to whether ill health, work outside of school, or conditions at home may be causing such physical strain as to interfere with schoolwork. Certain educational and psychological factors must next be considered. Curricula may be so out of date and the teaching methods so inept as to weary the pupils. The problems of interest and incentive discussed in Chapters V and XI come again to the fore at this point. Emotional strain of various sorts may cause various fatigue symptoms. Causes may vary from tenseness or sarcasm on the part of the teacher to family dissension or social ostracism; and results may vary all the way from mild indifference or irritability to mental abnormality or physical collapse.

As has been previously pointed out, to handle cases of emotional distress on the supposition that they simply need rest may often only aggravate the situation by giving more opportunity for worry or brooding. Instead, the underlying problem should be located and, if possible, solved. Where the underlying causes are educational, the situation must not be dealt with superficially. Extraneous motivations to "pep up" the student or adjustments of the amount of work to make it easier dodge the basic problems. The fundamental soundness of curricula and methods must be courageously examined. Problems of educational and vocational guidance are evidently involved here in various ways. Pupils should not be allowed to take work which is too difficult for them or which has no significance and interest for them.

That schoolwork will cause fatigue in the sense that nervous tissue will be exhausted need not be a cause for anxiety. Healthy children in a properly arranged and equipped schoolroom, doing work significant to them in psychologically sound ways, and reasonably adjusted emotionally will find school work exhilarating rather than wearying. Fatigue may be classed with emotional strain as a symptom of something physically, educationally, or socially wrong.

THE HYGIENE OF WORK AND THE TEACHER

The teacher obviously is an exceedingly important factor (the *most* important factor) determining the way in which her pupils are affected by and react to their work. To a considerable extent she can control the conditions of work, aid so that work is easier, and choose tasks and methods suitable for her pupils. She can often do much to help a youngster who is upset by problems outside the school. She very largely determines the "social climate" of her classes and the extent to which what goes on there is stimulating and refreshing or wearying. But to do all this she must herself be free from fatigue and have a good hygiene of work. All this is important for her effectiveness as a teacher. It is important to her for her own welfare. She does not want to become worn out. Instead she should know how to manage her work—and more broadly, to manage her total existence—so that her work goes well and she has both a useful and a happy life.

Clearly what has been said about conditions of work applies to her as well as to her pupils. Poor ventilation will affect her as well as them. She should have a good light on her desk at home. But even more than with her pupils, her problems of work hygiene are chiefly of the types last mentioned in the discussion above; they might be called problems in the mental hygiene of the teacher.

The Teacher's "Mental Hygiene" and Its Effects on Her Class.—First it must be emphasized that the teacher's condition and personality do indeed affect her pupils. An ill, worn-out, spiritless, or unstable teacher tends to make her pupils spiritless, weary, unstable, inefficient, and restless. Such teachers occur frequently enough that their discussion here is important. For instance, studies made in a number of cities in an eastern state showed that in twelve years of school a child had a

7 to 1 chance of having at least two maladjusted teachers (38).[6] And they do have an effect on their children.

In one study over 1000 pupils in the fifth and sixth grades and their 73 teachers filled out a personality adjustment questionnaire. When the teachers were classified into four groups according to their degree of emotional stability it was found that those who were most unstable tended to have more unstable students than those who were in the highest quartile in stability. Even though the teachers and pupils had been together only a few months at the time these measures were taken, the differences were statistically significant (2). In another study judges rated the degree to which certain traits existed in a group of 62 teachers commonly agreed upon as superior and in another group of 64 teachers commonly agreed upon as inferior. "Emotional stability" was the trait judged as second most important in differentiating good and bad teachers.

The teacher's condition is important not only as it affects teaching effectiveness but also as it affects her own happiness. The tense jitteryness of a tired or neurotic teacher is an unpleasant state and the trials and tribulations of teaching tend to exaggerate any such conditions. Many persons consider it uncomplimentary to be described as "acting like a teacher"; many young people reject teaching as a career for fear of becoming "teacherish." Of course, reference in such statements is to the unstable, tense, worn-out, timid condition of some middle-aged teachers—a condition which is common and characteristic enough so that it ought to be called an occupational disease. The nature and frequency of these conditions must therefore be considered.

The Occupational Hazards of Teaching.—Thirty-seven per cent of over 5000 teachers answering a questionnaire admitted that they had persistent worries intense enough to interfere with sleep, efficiency as a teacher, or health (24). In another study of 600 teachers, 10 per cent admitted having had a nervous breakdown, and on the basis of the tests 17 per cent were classified as "unduly nervous." The frequency of affirmative answers to certain of the questions used in this study and significant here is as follows:

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[6] However, the common belief that teachers are less healthy mentally and physically than the average adult is not supported by the evidence. On the contrary, as a group they tend to have better health than the average adult. Furthermore, a recent study shows that teachers today make higher estimates of their own health than did teachers in 1916 (24).

Question	Per Cent "Yes"
Do you worry too much about little things?	38%
Do you ever feel that you are not yourself?	34%
Do ideas run through your head so that you cannot sleep?	34%
Are you troubled with shyness?	29%
Do you find that you must do things several times or look several times to see whether you have done them before you can drop them?	27%
Do you feel tired most of the time?	26%
Do you get tired of people quickly?	20%
Do you cry easily and often?	19%
Do you have the habit of biting your fingernails?	19%
Does your mind wander badly so that you lose track of what you are doing or saying?	18%
Do your feelings keep changing from happy to sad or from sad to happy without reason?	17%
Are you troubled with the idea that people are watching you and talking about you?	15%
Did you ever have a desire to commit suicide?	11%

Many teachers in service are not in good physical health; one group of school physicians estimated that about 8 per cent of teachers have "low vitality" or "chronic ill health." Regular medical examinations of teachers in Philadelphia showed the following frequencies of difficulties severe enough for diagnostic comment (24):

Diseases and Defects		Health Practices	
Defective hearing	8%	Excessive carbohydrates	9%
Diseased tonsils	13%	Insufficient water	23%
Heart and circulatory diseases	29%	Insufficient sleep	3%
20% or more overweight	13%	Patent medicine habitual	10%
13% or more underweight	10%	Insufficient exercise	13%
Defects, posture and extremities	27%	Insufficient fresh air	9%

The strains of continued teaching may or may not affect one's health; it is important, therefore, to discriminate which teachers survive the best. Some evidence on this point is provided in Chart 78, which shows that teachers in good health to begin with maintain or even improve their health while teaching, but those starting a period of teaching in poor health tend toward an even poorer physical condition.

The reaction of some teachers to their work is well illustrated by the following statement: "Lassitude, fatigue—complete physical collapse are several attendant features (of teaching). These apply not only to me but to numerous young teachers. I had always led an active physical and mental life but the requirements of teaching surpassed all the rigors of my normal experience" (10).

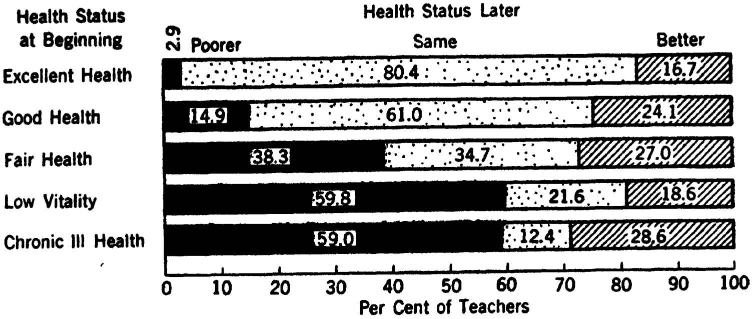

CHART 78.—Changes in health status during five years among teachers in five health-status groups at the beginning of the period. (From [24].)

That poor health may affect a teacher's attitude on a great variety of matters is well shown by the data which follow. In this study of over 5000 teachers a comparison was made between each teacher's rating of her health and her reactions to different aspects of her work (24). It is also important to notice that poor health has both a halo and a projection effect on the teacher's attitudes. That is, the teacher in ill health is dissatisfied about almost everything, and she blames the supervisor, other teachers, the climate, the pupils, etc., for things which may in great part be due to her own condition. And it must not be forgotten that the feeling of ill health may be an outcome of her fatigue, friction with supervisors, emotional frustration, or vocational dissatisfaction.

	Per Cent in Each Health Group			
	Poor	Fair	Good	Excellent
Dissatisfied with residence arrangements	7%	3%	2%	2%
Dissatisfied with type of pupils	32%	34%	28%	23%
Do not enjoy teaching	12%	35%	2%	1%
Believe health impaired by practices of supervisors	47%	30%	19%	14%
Believe health impaired by practices of fellow teachers	22%	17%	13%	11%
Believe health impaired by climate	26%	25%	11%	6%
Believe health impaired by depression	44%	33%	22%	12%
Believe health impaired by persistent worry	79%	57%	36%	21%

In brief, the occupational hazards of teaching include personality maladjustments, ill health, and a warped outlook on teaching and life. What are the causes? What may be done to remedy these situations?

Factors in Adjustment. The causes of these problems arise in the first place from the occupational characteristics of the teaching profession, such as the strain of handling large numbers of children, the special requirements and limitations as to conduct set up by the community, the sedentary nature of the work, and the tendency on the part of citizens to segregate teachers from contact with normal community life. There are, in the second place, problems of growing older which all have to face but which are often accentuated for an unmarried woman by certain of the above factors. Discussion of what may be called the psychology of adult life is beyond the scope of this volume, but the reader should realize that there are important changes from early through middle adulthood and into the older ages. Physically there is a decline in energy. Intellectually there is likely to be a declining facility in learning and adjusting. Interests shift markedly toward sedentary activities and a conservative outlook. The teacher-in-training should realize that there are such problems ahead of her and have some ideas as to ways of meeting them.

Faced with the same problems, some teachers grow and even thrive, but others break down with the strain. What are the important differentiating factors? Apparently they center on the teacher's ability to handle her own emotional problems, work with others easily without friction, and hold to consistent health habits. Even medical men, when asked to cite the causes of poor health in teachers, emphasized poor health habits and unfortunate personal relationships (24). And teachers, when asked to name the sources of their own difficulties, gave prominence to such things as personality problems, health problems, emotional conflicts, and lack of congenial associates (28).

In building personal effectiveness for meeting problems, both mental and physical health are important and interrelated. It is interesting to note the unanimity of opinion among school administrators and physicians as to which aspects seem most important. One hundred fifty-four school superintendents, 153 principals, and 11 well-known school physicians were asked to rank the following three causes of teacher inefficiency as to relative importance: "lack of mental or emotional poise," "inability to make necessary social adjustment," and "physical handicaps and diseases of the body." The average rankings by these three groups was in the order above mentioned; lack of mental and emotional poise was most important, and physical handicaps and disease least.

Present Health Practices of Teachers.—What are teachers now doing to 'maintain their physical and mental health? Two studies of a wide sampling of teachers showed the following distressingly poor hygienic practices (10, 24):[7]

Practices	5000 Teachers	600 Teachers
No hobbies	42%	28%
No social activities	7%	
No religious, community activities	25%	35%
No work in professional organizations	41%	
Reading as favorite evening pastime		39%
No systematic exercise	36%	62%

It is surely unfortunate that 42 per cent of teachers in one study admitted having no hobbies and 62 per cent in the other took no systematic exercise (difference in the wording of the questions in the studies may explain some of the differences in percentages). It was also found that the number of hobbies participated in and the amount of time spent in social activities decreased with age; these decreases occurred at the very time when such activities would have been especially desirable. Indicative of the relationship between these practices and teacher hygiene are the findings that only 19 per cent of "unusually stable" teachers had no hobbies but 39 per cent of the "unduly nervous" had none, and that 75 per cent of those in excellent health took systematic exercise but only 38 per cent of those in chronic ill health did. Still another study showed that the kind of hobby pursued was related to mental health. Thus, the top fifth in personality adjustment as measured by standardized tests participated four times as often in "active, outdoor, or social" hobbies as the bottom fifth; no difference was found between the two groups' participation in "sedentary, vicarious, or solitary" hobbies; and the best-adjusted participated only one-sixth as often in "work-type or teaching" hobbies as the least well adjusted (29).

How then may one go about insuring that teachers have effective teaching personalities? Also how may the teacher develop health practices which will assist her in maintaining or improving her effectiveness and satisfaction in teaching? The remainder of this chapter will be devoted to a discussion of positive precepts which answer these questions.

The School's Part in the Hygiene of Teaching.—A first suggestion is to select only those persons who are mentally and physically fit for teaching.[8] During the teacher-training program itself the emphasis should be on student guidance in terms of criteria of selection to be applied later. Thus, students should be given adequate information concerning the occupational hazards of teaching so that they may either drop out early or be prepared for them. Emotionally maladjusted individuals and persons in poor health should be helped and if they do not reach reasonable standards they should in extreme cases be barred from teaching.

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[7] No evidence is available as to how these practices compare to those of persons in other occupations; being better educated, it may be that teachers are no worse than many people and better than most. Anyhow the above findings are distressing.

Too many young people simply drift into teaching; just as some individuals go on to college from high school because that is the familiar life, so some go into teaching because they like school. Analysis of present practices in teacher selection shows that little attention is given to the health status of teachers. Definite health requirements as a basis for certification have been established in only about half of the states, and in many cases these requirements are quite superficial. Only 7 per cent of small cities and 33 per cent of larger ones require thorough health examinations, and very few schools demand a health examination at the end of the probationary period of teaching (24).

The improvement of teaching conditions themselves is also very important. Chart 79 shows the differences in health disorders and worries of teachers working in schools with and without certain health services. School facilities and practices which permit the early detection and treatment of physical disorders and which tend to provide feelings of security consistently result in better mental and physical health. It is important to note that improving the working atmosphere of the school may be as important as making physical changes in the plant. Thus in a study of the physical efficiency of Cleveland teachers, it was found that the school with the lowest rate of absence due to illness (0.9 day per year against an average of 4.79 days in other schools) did not have any particular physical advantages but the principal tried to cooperate with the teachers to reduce the strain of teaching conditions. His attitude of sympathy and helpfulness seemed more important than material provisions for health (5).

Selection at certification time and improved teaching conditions are not sufficient, however; the teacher must be shown how she may better adjust to the stresses and strains of teaching. The third point in improving the hygiene of teaching is to show the teacher how she may maintain or improve her own physical and mental health.

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[8] One teachers college in studying its graduates who had been out five or more years found that participation in worth-while activities in college was the best indicator of later success in teaching, i.e., differentiated best between teachers rated as illustrious, average, and pitiful failures (33).

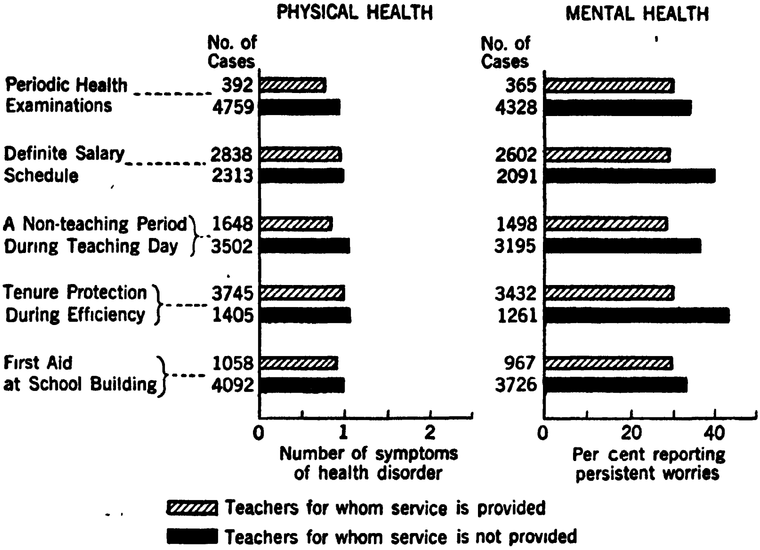

CHART 79.—Differences in the physical and mental health of teachers in schools where certain health services are, and are not, provided. (From [24].)

The Teacher's Part in the Hygiene of Teaching.—All that has been said concerning the hygiene of the school child may well apply here since the teacher is in a real sense also creatively adjusting to problem situations. What general precepts seem most useful here? First, the teacher needs to watch her health. The period of adolescent good health will soon be gone and as an adult she will probably tend more and more to omit healthful exercise and recreation. Furthermore, adulthood is a period of marked physical changes which include much more than mere increased weight, wrinkles, and gray hair. The teacher needs to develop a regular program for healthful living including both diet and exercise which are adjusted to her needs at the time.

A second avenue for assuring healthful adjustment is the building of secure social ties. The desire to obtain social status and affection is a prime want in life (and therefore itself a source of frustrations). There is also good evidence that the person who feels secure in his status as a member of a group is better able to absorb the shock of other frustrations. Yet as soon as students leave college, membership in group activities declines rapidly. The situation is somewhat further aggravated for teachers by the tendency in communities not to invite them to participate in local activities; abetting this is the "suitcase teacher" who waits only for the week-end for trips away. And with increasing age, family and home ties become broken. The teacher may soon find that she has few friends and must in solitary spinsterhood face all of her problems alone. She would do well to develop friendships where she is; community, church, and P.T.A. activities provide many opportunities for acquaintanceships. It is of particular importance that all of her friends be not just other teachers; non-academic friends afford that necessary release from "shop talk."

Social security activities of the government such as retirement pay and tenure laws also act to provide feelings of "social security" in the face of worries about holding one's job and reaching old age. National and state professional groups in turn provide other experiences of group belonging and security. The teacher may in addition wish to add health insurance as a further means of security.

A third point in this suggested hygiene program is the development of a wider range of interests. Characteristic of the maladjusted teachers cited above was the narrow range of activities engaged in; particularly characteristic of teachers admitted to state hospitals for the insane is a lack of a well-rounded interest pattern (22). Furthermore, interests should be more than such escape activities as movies, fiction reading, and bridge playing; they should include activities which promote self-esteem through their worth, i.e., church, Red Cross, community, music, drama, art, and writing activities. Participation in such activities provides a release for pent-up feelings which arise from the many frustrations in teaching. They permit participation as a person and not as a teacher. And the feelings of personal worth which grow out of them also aid in resisting the self-depreciating effects of failures in teaching.

So far means have been suggested which make a person ready and resistant in the face of frustrations. There is also need of learning means of handling actual frustrating situations. Some struggle through the tangled web of each emotional situation on what appears to be mere strength of character. Others more intelligently seek means for handling such ego-destructive situations with less wear and tear. As a fourth suggestion in a hygiene program, then, it is suggested that the teacher in training should develop "work skills" for handling frustrating situations.[9] Actually not much is known of the possibilities in this field; what can be suggested represents "tricks" more than effective work skills. Research is needed to analyze the methods used by particularly effective personalities in handling frustrating situations. For instance, what abilities characterize the inventor, the person who is unruffled in the face of catastrophe, and the moderator or statesman who can see the basic issues and possible compromises in disputes? Comparison of effective and particularly ineffective personalities might be used in such an analysis. When found, these methods should be taught; they are important and akin to methods of study and training in thinking to be discussed in a later chapter. The material which follows represents the practical methods now evident.

What Are Some of These Work Skills?—1. The basic skill is ability to discern what the problem really is. For more or less unconsciously a person uses mental mechanisms such as sour grapes and projection to reduce tensions. As a result he is led to direct his energies toward attacking the wrong problem. For instance, if a teacher does not receive a promotion she may comment acidly that promotions are obtained only through pull. For the moment this reduces her feelings of frustration and places the blame on poor administration. Even though the school administration announces that promotions are made on the basis of merit, this teacher will treat the statement as "whitewash." If in answer to this frustration she decides that changing the administration is impossible, she can brood upon her martyrdom. If she attacks the administration, she obtains the reputation of being a troublemaker and is so treated. In neither instance does she help herself. Persons thus need skill in analyzing situations to discern what the real issues are; this includes the ability to make a self-analysis and an appreciation of these pseudo-protective mental mechanisms. The teacher should sense realistically that she wishes more money, feels somewhat insecure in her job, and resents her non-promotion as evidence of her own lack of worth. She should analyze the external conditions, i.e., promotion policies, financial condition of the school, her seniority. And finally she needs to take stock of her own abilities in light of the competitive market; she needs to look at such objective evidence as students' liking her, unusual growth by students under her tutelage, selection as adviser by students, election by other teachers to professional responsibilities, and publications. With such an approach the problem is seen for what it is and the attack can be on the real objective. If it should turn out that the crux of the situation is that "pull" is necessary, at least the teacher has evidence to support her complaint.

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[9] It is the writers' opinion that because mental hygiene work grew out of the clinical treatment of disarranged minds, too much emphasis has been placed on the counselor assisting the counselee to unravel the tangled skein of his thinking so that he may again think straight, and too little attention has been given to showing him how to keep from getting tangled up again. With his emotionalized thinking straightened out, it is true that a person can attack the next problem better than he could have without such treatment; but a further step is needed. He must learn methods of attack on problem situations so as to facilitate their solution. Brute strength and brilliance of intellect are not enough. Mental hygiene as a preventive science needs to emphasize training in these work skills. C. R. Rogers' *Counseling and Psychotherapy* (Houghton Mifflin, 1942, 450 pp.) discusses for the counselor this need for aiding the client to learn to solve his own problems.

Certain childhood values may continue into adulthood where, unappreciated, they distort a person's thinking. Thus some adults are overly bothered by criticism and by a fear of doing something not done by others. An appreciation that there is a mutual responsibility for an individual to conform to the group mores and for the group to permit him to have his own unique differences will do much to lessen such overly tense inhibitions. Also occasionally carried over from childhood is a strong feeling that one must respond favorably to requests from those who are older or in positions of authority. Here a person needs a sensible appreciation of the values of following and of his own rights and abilities.

2. A second principle is to do something about the problem or to let off steam. In the tenseness of immediate frustration it is well in certain instances to let off a little energy in private. Chopping wood, long walks, swearing, crying have been proverbial tension-release devices. Once the immediate tension is gone, however, more constructive means are needed. In analyzing the problem or in making plans it is more effective to verbalize it—in writing or in talking—than it is to mull it over in your head and spleen. Usually you find that the problem is not really so bad after you have described it to someone. At the time when some frustration particularly lowers your feelings of self-esteem, do some other thing which you like and which is worth while. This is sometimes translated as a woman buying a hat when unhappy, but it may also include activities of more social worth.

3. A third principle is to devise techniques of placing problems in their true perspective. The present, as do all things nearby, seems to loom larger than the past or future; the person needs some means of

putting each situation in its place. False techniques such as saying "nothing matters," "everything will turn out all right," and "it could be worse" do not help in the attack on the problem. What is needed is some such means of obtaining true perspective as viewing the value of the problem in light of one's next five years of living. Another technique is to observe the frequency with which one's own type of trouble is present in others and something as to their evaluation of its severity. Still another perspective maker is to decide whether, in spite of all his troubles, one would care to exchange places with the average person. Thus in one study of the marital happiness of some 800 married couples 84 per cent thought themselves happier than the average married couple, yet each of these persons no doubt spent a great deal of time worrying about his problems and how to reform his mate.

4. A fourth principle is to try a new approach to your problem and not merely repeat going over the same possibilities. Your thinking may get into a rut so that you cannot see all possibilities. Ways to overcome this include (a) taking a short vacation from the problem so as to return to it from a new background and (b) talking it over with some trusted and experienced person who, unemotional and with a different background, can suggest other possibilities. Another help is to write out the issues with their pros and cons. New relationships are more often seen when data are close together. If this is drawn up as a balance sheet showing the reasons for and against each possibility, some indication of perspective may be obtained. An effort should also be made to think completely through what the possibilities are in each plan of action rather than to dismiss a plan as soon as objections begin to appear.

In brief, then, the teacher needs to watch her personality as it develops during adulthood. Both from the angle of being stimulating to her pupils and from the angle of personal satisfactions, she needs to develop techniques which will insure that her personality remains as flexible and resilient in adjusting as it was when she was first graduated and hired. She should be aware of the occupational hazards of teaching and of the hazards of physical and mental changes with increasing age. As preparation, (1) she should develop and maintain a personal health program, (2) she should develop friendships and group memberships for feelings of social security, (3) she should develop a wide range of interests for a balanced mental life, and (4) she should develop skills in responding to frustrating situations.

SUMMARY

Pupils' efficiency in work obviously is influenced by the conditions under which they must work. Attention has been focused not only on the suitability of such physical arrangements as lighting, seating, distractions, and length of periods and on such conditions of the learner as fatigue and poor health, but also on the manner of running the class program. Of the three categories, this last has appeared to be of greatest importance. Boredom, emotional strain, and fatigue seem primarily to arise from out-of-date curricula and methods of instruction. It might be said that in this instance the improved hygiene of work is to be obtained more from social and psychological changes than from physical alterations. The conduct of the teacher is the prime determinant of such efficient conditions for pupil learning.

In turn, the strains of teaching may affect the physical and mental health of the teacher. Deterioration of teacher health and adjustment makes it more difficult for pupils to adjust healthfully and efficiently to the school program. Added teaching problems can only start a vicious circle of declining health and less efficient teaching. The teacher herself is interested in these occupational hazards. The evidence seems clean cut that teachers follow many poor health practices and that those in especially poor health are still further affected by the strains of teaching. The teacher needs to maintain a program of healthful living functionally adjusted to the changing requirements of her increasing age. Many such health practices were discussed.

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CHAPTER XVI

The Permanence of Schooling

Thirty million children and young people attending the schools and colleges of this country, taught by a million teachers at an annual expense of three billion dollars—surely there should be some considerable systematic knowledge of the results of such a stupendous enterprise. But actually the knowledge is so slight and so incidental as to make one gasp. There is something to suggest that the effects of schooling upon physical development often balance on the red side of the ledger; the stress of beginning school may actually slow growth a bit, and the sedentary character of conventional education may interfere with the development of the finest physical vigor. Teachers may do the wrong thing for visual handicaps, the school may be a center for the spread of contagious disease, or its athletic ambitions may burn out the health of its finest young people.

What little is known regarding the effect of the school on the growth of personality and character and the flowering of interest is also not as encouraging as might be hoped. Teachers tend to favor passivity and to repress the vigorous personality. Bright children become bored, and slow children discouraged. The school tends to narrow interests to the verbal and academic, and all too often the general tone as regards intellectual interests is either dilettante or perfunctory. The school morale may foster cooperativeness, but more often it operates in the opposite direction. There is evidence that moving pictures may develop attitudes and prejudices of some permanence, but there has been little experimental investigation of the effects of the usual schooling upon prejudice, attitude, and interests. It may almost be said that a systematic educational accounting which would attempt the appraisal of the effects of the usual educational procedures upon personality and interest has scarcely progressed to the point of discussion among educators.

It may well be argued that the above two paragraphs neglect the favorable evidence and are unfair to a host of modern-minded school administrators and teachers who have these problems very much at heart. It is true that in the better schools there are splendid programs for the safeguarding of health and for physical education, that the school lunch is often the best meal a child has, and that he is often much better off both physically and morally in school than at home or on the streets. And it is true that educational leaders are acutely conscious of all these problems. But the average school is not the better school. To be better than a slum tenement or a city street is no adequate justification for a school's program for either health or character training. Even modern-minded educators often approach many of these issues more from a sentimental than a scientific point of view. For the average teacher and teacher in training these matters are unquestionably of such importance as to warrant emphasis with even a certain possible exaggeration.

However, the traditional school has not regarded problems of health and emotional development as the center of its responsibilities. Presumably it would study the extent to which, as a result of its efforts, there was established a knowledge of arithmetic or history, or skill in reading, or insight into the scientific world. As a matter of fact, there are, here, scattered bits of tentative, inadequate experimentation. But it is a strange anomaly that more is known about the effects produced by the memorizing of nonsense syllables than by the study of reading or history; and it is typical of the tendency of psychology to shun the practical, and of education to avoid the experimental, that it was thirty-five years after the first systematic work on the permanence of the learning of nonsense syllables before there was systematic work on the permanence of the learning of subject matter in school.

The above statements are general; the reader should pause a moment to give them concrete significance by an evaluation of the effects of his own education. How much (he should ask himself) do you remember of your college or high school courses? Can you get the meaning of *Æquam memento rebus in arduis servare mentem,* or *Il est bon d'être habile, mais non pas de le paraître,* or *Gesetz ist mächtig, mächtiger ist die Not*—the question will not be asked as to whether you can give the second person singular imperfect of *mitto, können,* or *rendre.* Or can you prove, as you probably could once, that if two angles and the included side of a triangle are equal to two angles and the included side of another triangle, the two triangles are identical? Can you extract the square root of 2861, summarize the plot of *As You Like It?* Do you know when, between whom, and about what the Thirty Years' War was fought, or what were the causes of the panic of 1893? Who were the Vandals, the Whigs, the Jacobites, the Roundheads, the Carpetbaggers, the Populists?

The reply may be that the important values obtained were not such items of knowledge but appreciations, understandings. Well—what leisure reading have you actually done during the past two months, and does it really show an elevation of taste, or do detective and "true-story" magazines appear on that list? How much has what you learned in your history courses actually contributed to your thinking about current economic and political problems? You reply that the personal influence of your teachers was the important contribution of your education. How many of your former teachers can you now name? There were gains in friendship with fellow students; however, there would have been friendships if you had not gone to high school or college—furthermore, do alumni gatherings after football games suggest continuing intellectual companionships of the highest order? What has your schooling contributed to your physical well-being? None of this is meant to be cynical. But there are too many Pollyannas in education, and too many who dodge the issue of educational outcomes by stressing vague, undeterminable, transcendent values. A systematic attempt at an appraisal of the results of schooling *will* show many gains over the education of a generation ago—but it will also everywhere show stimulating opportunities for further advancement.

The most direct and obvious question to be dealt with in this chapter is the extent to which what is learned in school is retained, at what rate forgetting occurs, and how retention may be increased. The next two chapters will deal with the effects of learning in one field on learning in another, and the effects of schooling on everyday life.

THE PERMANENCE OF LEARNING IN THE SCHOOL SUBJECTS

The usual method of investigating this problem has consisted merely of giving a second final examination or test a few months after a course was completed, and noting how much the students have forgotten since the examination given immediately at the end of the course.

The Retention of Knowledge of a School or College Course.—Chart 80 exhibits fairly well typical findings regarding the permanence of school learning over a considerable period of time. In general, these students showed a knowledge of about three-quarters of the material covered in the test at the end of the course, less than half after one year, and about one-quarter after two years. The differences among various subjects are probably of relatively little significance and are presumably due to differences in the diffuseness of the subject matter or the amount of intensive drill, or to differences in the difficulty of the test used and the extent to which it reached out into somewhat incidental subject matter. The gross fact which stands out is that the million teachers and the billions of dollars spent in education seem to be operating with most distressing inefficiency—an inefficiency which is challenging.

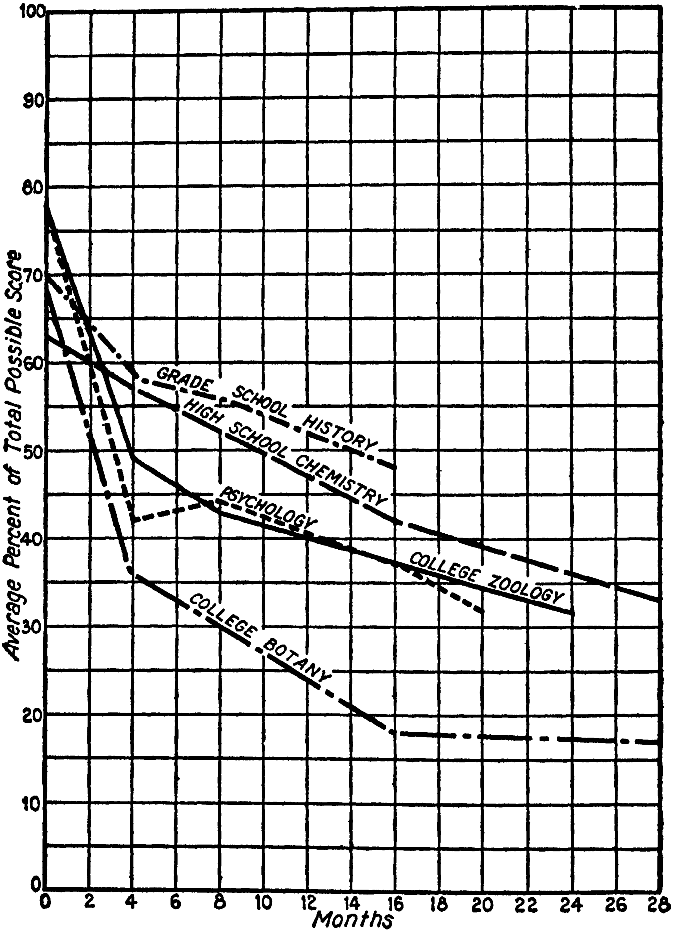

CHART 80.—Retention of one elementary school subject, one high school subject, and three college subjects for from 16 to 28 months after the end of the course. (After S. J. Bassett, *Johns Hopkins Univ. Stud. Educ.*, 1928, No. 12; E. B. Greene, in *J. Educ. Res.*, 1931, 24:262–273; S. R. Powers, *Teach. Coll. Contrib. Educ.*, 1924, No. 149, pp. 49–54; and P. O. Johnson, in *J. Educ. Psychol.*, 1930, 21:37–47.)

It may be argued that not all subject matter is supposed to be remembered over a period of time. Quite true. Hence it is necessary to consider separately different types of material.

The Retention of "Minimum Essentials."—First of all, it is to be noted that there *is* certain material which should be remembered—there are a few "minimum essentials" which ought really to be mastered. There has been accumulated a considerable amount of information regarding the extent to which this mastery is achieved, but the findings are hardly flattering to educational pride. There have been, for instance, numerous studies of the persistence of errors in English composition. It has repeatedly been found that simple usages (such as the apostrophe to show possession), which are taught from the third grade through the college freshman year, are still not known by college students. There is little change in errors in English, either as to type or as to number, from the freshman year of high school to the freshman year of college, in spite of four consecutive years of English. A study of the writing of college students has shown an average of 207 errors per 10,000 words in the mechanics of composition, although the grading was most liberal (40).

Ten per cent of a group of college students were unable, on a 20-problem test in long division, to get a single problem right; 18 per cent failed to multiply a single problem in common fractions correctly; and 20 per cent were unable to do a single one of 20 problems in the division of decimal fractions. When a group of 126 college students were asked to define, in any way they could, the twenty most common units of measure (such as mile, gallon, peck, or millimeter), it was found that on an average 58 per cent of these students showed a lack of any knowledge of the unit, even though grading was liberal.[1] And it should be appreciated that these students had had most, if not all, of these units taught them in the elementary schools, had used some of them in everyday purchasing or met them in reading; almost half had had high school physics and had probably used most of them in that subject. A study of 1576 college freshmen as to their knowledge of the 24 most common and important technical terms in grammar showed that only 53 per cent of them could locate the object of a verb in a simple sentence, only 53 per cent could find a subordinate clause, 73 per cent could find three nouns in a sentence, and 69 per cent could locate the pronouns in a sentence (40). Moreover, it must be remembered in connection with these college data that college students are on the whole a superior group intellectually, who in high school have had incidental if not direct training and review on such grammar school material. Doubtless grammar school pupils not going on through high school and college would remember still less of all this material which their teachers earnestly put before them. Data from the public schools do indeed illustrate further how inadequate performance on essentials may be.

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[1] The following sample errors will make clear the grossness of ignorance: *acre* was defined as one square mile, 2½ square miles; *mile* as 352 feet, 11,500 feet; *degree*, as a measure of weakness or strength, the smallest unit of distance measurement; *meter*, as an English measure of distance with reference to our mile, a tiny unit in an inch, 27 inches, about three miles.

> A state-wide survey of over 9000 Iowa students in the ninth grade found that less than half of them could work as much as one-fourth of the problems which were considered basic to ninth-grade algebra (32). Still another study showed that the average student among 1337 eighth-graders knew only 63 per cent of the basic terms in everyday arithmetic (24). An extensive study of knowledge of technical terms in history[2] showed at the end of the twelfth grade the following percentages (of about a thousand students) able to recognize the meaning of certain representative terms: senator, 79; annex, 75; repudiate, 55; policy, 62; referendum, 54; caucus, 53; inflation, 26; injunction, 69; indemnity, 82; corporation, 53.

Although too much should not be made of a high school or college student's difficulties in arithmetic or technical vocabularies, the total evidence would undoubtedly suggest a distressing ignorance of important skills and knowledge which, it is hoped, would continue to be the student's possession.

Retention of General Understandings and Points of View.—It may be argued that although detailed information is not remembered, a fund of general information and understandings and points of view is retained. It is first necessary to note that all too often such general understanding is not obtained in the first place, or at least the extent of change may be of small degree. For example, research has made strikingly clear that pupils often gain practically no understanding of the concepts employed in history or of basic generalizations in either history or literature.[8] A comparison of Stanford students' attitudes toward United States Presidents before and after a political science course on contemporary administrations showed little change, although the effect of the stereotype of party affiliation was somewhat lessened (15). The change may be in either direction. In one study, reading a book on careers tended to produce a less favorable attitude in high school students toward the occupation each had chosen (2). In the high schools of Aberdeen, Scotland, a study (mentioned in Chapter IX) of over 1000 pupils revealed that the particular poems selected for study seemed to cause children to like poetry less and less as they advanced through the grades (25). It is a general though understandable weakness of teachers that they overestimate the extent to which pupils profit by their teaching. Teachers probably also overestimate the extent to which they have stressed attitudes and general understandings. They usually put what they stress into their examinations, and students usually study for what they expect in examinations. Course examinations are notorious for their failure to measure general understandings and points of view.

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[2] The results are on the basis of objective-type questions aiming to get at practical meanings in a simple colloquial way and inevitably offering a certain chance for guessing. Sample questions are as follows: What is the title of a member of the higher branch of the Congress of the United States: (a) representative, (b) senator, (c) delegate, (d) judge? What is the purpose of diplomacy: (a) to carry on affairs within a country, (b) to elect governmental officers, (c) to conduct relations between countries, (d) to increase industrial output? When is an injunction most often used: (a) during a strike, (b) during a battle, (c) during an expiration, (d) during a voyage?

One investigator found that out of 56,504 questions appearing on 2250 history examinations, over 90 per cent dealt purely with facts (38). Not a single question related to such matters as the development of international sympathies, the removal of prejudice, the weighing of historical evidence, or the development of any appreciation that the present might be better understood if interpreted in terms of the past. Yet it is clear that certain undesirable forms of nationalistic prejudice are regularly developed in history courses; if these attitudes are engendered by the reading done in connection with schoolwork there would seem no adequate reason why other attitudes could not be developed by different materials and methods.

Evidence of a similarly indirect nature has been obtained from the analysis of 382 final examination questions in chemistry (19). All but 7 per cent of these dealt with purely factual material directly concerned with the science. If teachers concentrate on factual detail, any great development of more general values such as scientific attitudes can hardly be expected.

The moral seems obvious that teachers need in their teaching and testing to stress the development of general understandings and points of view if the pupils are so to learn. The emphasis in testing is needed not only to measure such gains but also to emphasize to pupils the importance of this learning.

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[8] A. M. Ayer, Some difficulties in elementary school history, *Teach. Coll. Contrib. Educ.*, 1926, No. 212, 70 pp.; T. W. H. Irion, Comprehension difficulties of ninth-grade students in the study of literature, *ibid.*, 1925, No. 189, 116 pp.; H. Meltzer, Children's social concepts, *ibid.*, 1925, No. 192, 91 pp.

There may be little relationship between amount of information gained and change in attitude. Thus in a college course on child training, improvement in both knowledge and attitudes was stressed as each topic was taught. Examinations on both knowledge and attitudes were given before and after the course so that improvement could be measured. Table 49 shows these gains; the translation of the differences between the before and after scores into critical ratios makes possible a comparison of the changes. The course improved both knowledge and attitudes, but there appeared to be little relationship between the amount of knowledge gained and the degree of change in attitude in a given topic. For example, knowledge about "adopting children" made the second largest gain, but attitudes on this matter changed least.

TABLE 49.—Comparative Changes in Knowledge and Attitude on Topics Taught in a College Course on Child Training (3)

Topic	Attitude Critical Ratios	Knowledge Critical Ratios
Self-reliance	11.9	8.7
Self-expression	8.8	6.3
Corporal punishment	8.5	16.3
Praise	5.5	8.2
Fear	2.7	8.0
Adopting children	1.0	14.1

When testing does emphasize the development of general understandings and points of view, there is some evidence that such learning persists. Two years after the above child-training course was completed, the attitude scales for "self-reliance" and "corporal punishment" were mailed to former members of the class, of whom 60 per cent replied. After this two-year lapse it was found that the attitudes had tended to regress toward their original status, but 82 per cent and 59 per cent respectively of the original gains were maintained; these attitudes were still significantly different from those before the course was taken (3). Such findings are corroborated by the studies reported in Chapter IX on the permanence of the effects of movies on attitudes.

An interesting series of studies provides some indication of the relative permanence of gains in general understandings and knowledge of terminology. The pupils were given tests before and after each course to measure the amount learned. The tests were repeated a year later and the percentage remembered of the amount learned during the course was computed. These figures are shown in Table 50.

TABLE 50.—The Relative Permanence After One Year of Three Types of Learning Gained in Courses

Type of Examination	Per Cent of Course Gain Remembered One Year after the Course Biology (54)	Zoology (54)	Chemistry (18)
Naming terminology	23%	23%	66%
Applying principles	101% [a]	127% [a]	92%
Interpreting new experiments	125% [a]	111% [a]	....

[a] The gains instead of loss with the passage of time seem at first hardly believable. But it might be that the abilities in application and interpretation were in this interim being further learned in other subjects, or from general experience in their use. Certainly this last would be hoped for.

Apparently improvement in the ability to "apply principles" and "interpret new experiments" persisted much better than did knowledge of "terminology." Another study of forgetting over the summer by seventh-graders showed a 17.4 per cent loss of "facts" but only a 9.1 per cent loss of ability to "explain scientific phenomena" (57).[4]

In brief, then, the evidence seems clear that schools have in general not emphasized the teaching of general understandings and points of view. When they have, gains in such respects have been made, and these gains have persisted—sometimes less well than factual learning, but sometimes extraordinarily well. Clearly, further research on many of these matters is needed. Especially lacking is evidence as to the permanence of learning from activity programs and of such social traits as leadership and cooperation. Some indirect evidence on this point will be found in a later chapter on the effect of schooling on adult life.

Retention of General Training.—It has been argued that, as a result of this and that course or all of them together, there are developed certain general abilities, as in methods of work or skills in thinking, that are of great permanent benefit to the students. Again there is the unfortunate fact that many of these abilities seem never to be acquired in the first place. In one survey, 25,000 sixth-, seventh-, and eighth-graders in Iowa were tested on certain reading skills needed in carrying on high school social science and usually taught in the fourth and fifth grades (1). Marked deficiencies were found, e.g., barely one-half of these pupils could make simple measurements of distance on a map, and only about half could use an index page to find the source for answering a question. While a more thorough analysis of work skills will be made later (in Chapter XVIII), it may be briefly pointed out here that most good students in high school or college have many poor work habits; for example, few seem able to plan use of time, to employ effective study techniques, or to use library resources. Various studies show that work skills are usually not developed unless specifically taught, and even then continuing emphasis must often be placed on their use to keep them at a high level.

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[4] On the other hand, still another study as to how well students remember chemistry from one to four years after taking a course led its author to conclude that "retention of the facts of chemistry is sustained over a longer period than is the ability to apply the facts" (35). In this study a standardized test of chemistry accomplishment (Iowa Training Test) was used to measure memory for chemistry facts, and the author constructed a test for measuring the ability to apply knowledge of chemistry to the solution of everyday problems. However, all investigators agree in showing a considerable permanence of gains in the more general abilities.

What, then, is the general conclusion regarding the permanence of learning in school? In the first place, it is clear that there is a most distressing lack of information upon the subject. But the scattered evidence available suggests that, over a period of time, the usual results are so small as to present an outstanding challenge to the schools. A pupil's education advances only little by little; there is a gradual piling up of educational residuals, but only very slowly, and the gains often seem hardly to compensate for the expense and effort. A little evidence indicates that permanence of any gains in attitudes and understandings may sometimes be considerable, but such gains often appear negligible in the usual school. That the whole problem of educational outcomes has not been more investigated is little less than scandalous.

THE GENERAL COURSE OF FORGETTING

Because forgetting seems to be such a universal and distressing phenomenon, destroying the results of so much time and effort on the part of both teachers and pupils, a closer study of its causes and course would seem in order before considering methods by which the loss may be decreased.

Rate of Forgetting of School Subjects.—Chart 80 summarized the rate of forgetting in various school subjects after the courses were over. Those curves had certain characteristics in common. They dropped more rapidly at first, then flattened out almost to a level which would appear to represent a comparatively permanent educational residue. The original mastery at the end of these courses varied from 64 to 78 per cent. The final figures for each subject, after 16 to 28 months, showed between 16 to 48 per cent still retained. These differences may be due to differences in the nature of the tests used or groups tested, rather than to any real differences in amount of forgetting of these different subjects. However, curves of forgetting may vary greatly. Some show much slower depreciation than others. Close inquiry regarding methods of instruction, use of the subject after it is taken, and other possible factors might yield much information which could be used to bring about greater permanency.

Certain material on forgetting over a short time is of special significance. To determine the effects of the summer vacation, various studies have investigated the changes shown by elementary school children between May and September in intelligence, reading, spelling, arithmetic reasoning, arithmetic computation, handwriting quality, and history.

Wherever intelligence has been measured, there has been a slight increase, as would be expected during a four-month interval. In reading also there is usually an increase. But in spelling and arithmetic there is a loss. The important factor appears to be this: Throughout the summer there is continuing practice in reading—of books, magazines, or at least signboards and other incidental material. In other words, reading skills are *used* by the children. But much of the material in other subjects is not used, and so is quickly forgotten. This factor—extra-school use—is doubtless a very important element in permanency; such use also implies that the material is meaningful to the pupil. The point is so important that it will be returned to later.

Investigation has also shown that it may take several weeks of the new school year before pupils regain the loss over the summer vacation and are back where they were the preceding May. Several short vacations instead of the long summer holiday, it has been argued, might be preferable.

The above material deals with retention of the content of entire courses, or of complex skills. Chart 81 shows retention of small portions of a subject. Sixty-four seventh-grade pupils were given a number of history questions at intervals of 4, 8, 12, and 16 months after the original examination. The chart shows the percentage getting each of four sample questions correct at each interval. Question 4 shows a slight loss in the first four months, a steady retention, then a gain (perhaps because of mention of the topic in a later class). In contrast, Question 10 shows a steady loss, but in decreasing amounts, throughout the period of testing. It is probable that specific learnings behave in these and other different ways, depending on incidental review and a variety of other factors. It should be noted that the two items showing good retention on the first examination lost relatively little subsequently—an average of only 7 per cent—whereas the two questions poorly mastered at the start lost far more—an average of 39 per cent.

Differences in Permanency with Different Types of Material.—Extremely important as affecting permanency is the degree to which the

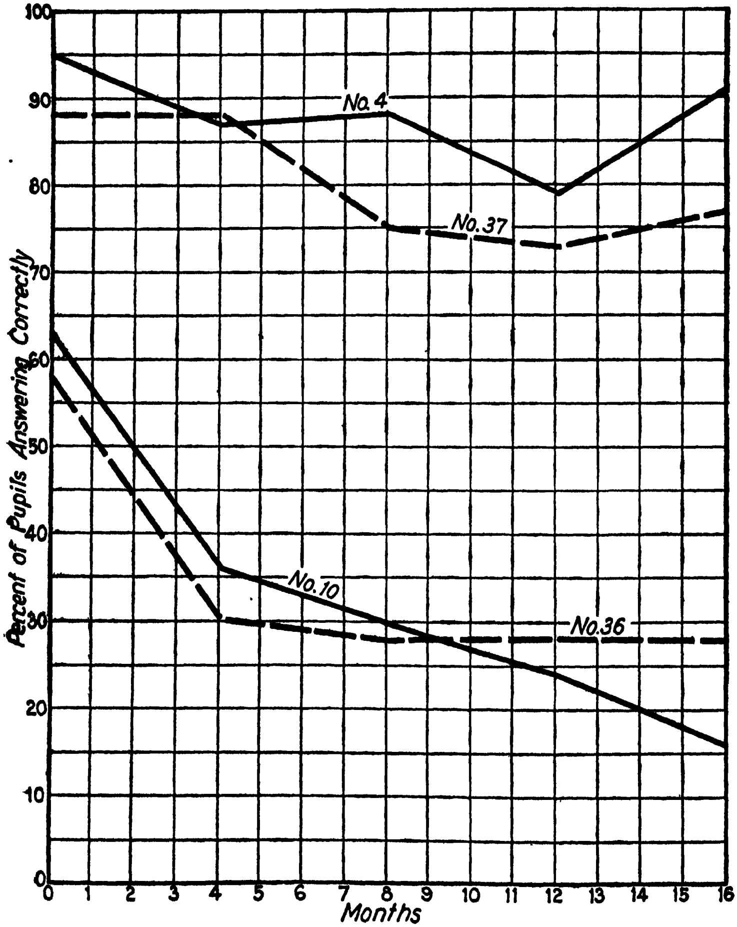

CHART 81.—The forgetting of items having different degrees of mastery on the original learning. (After S. J. Bassett, in *Johns Hopkins Univ. Stud. Educ.,* 1928, No. 12.)

material is meaningful. Nonsense syllables require more time to learn and are forgotten faster than sensible material. In general, the more sensible the material is, the easier it is to learn and to recall. This point may be illustrated by comparing results from two curves for the memory of sensible material, with results from a curve for remembering nonsense syllables (see Chart 82). In this experiment nonsense syllables

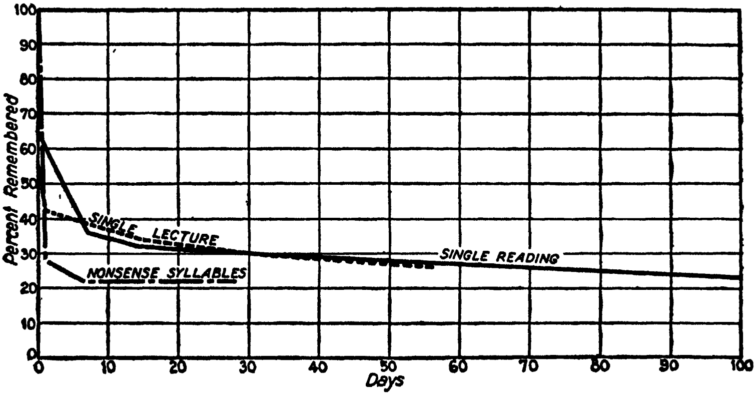

CHART 82.—Retention of nonsense syllables, material covered in a lecture, and ideas in a passage read once, for a period of from 28 to 100 days. (From H. Ebbinghaus, *Memory,* 1885; H. E. Jones, in *Arch. Psychol.,* 1923, No. 68; and A. A. Deitze, in *Univ. of Pittsburgh Bull.,* 1930, 27:39–46, respectively.)

were learned to a single correct repetition. This curve shows a great loss during the first day, and thereafter levels off to a retention of approximately 20 per cent. The curves with which it is compared are for sensible material. One was for recall of the facts in a passage of only 170 words read once by 2789 pupils in Grades 7 to 12, recalls being requested at the end of 1 day, 15 days, 30 days, and 100 days; the other shows retention after 7, 14, and 56 days of matter in a college lecture in psychology. The first test showed only 60 per cent of the total possible score, but the falling-off with time was much less. These curves also indicate something as to the rate of forgetting a single lesson.

Similar differences in curves of forgetting have also been obtained when puzzles were learned through rote memorization and through emphasizing the principle behind each puzzle (29). When the ability to learn through memorization is compared to the ability to learn through understanding, correlations of only .00 to .41 are obtained (41).

In this connection Table 50 may well be returned to; this showed comparative permanence of gains in terminology, ability to apply principles, and ability to interpret new experiments. It will be remembered (if the permanency of learning that material was reasonably satisfactory!) that whereas terms were not very well recalled, ability to apply principles and to interpret showed no loss but a gain, a year after the course was taken. Ability to make applications and interpretations would presumably especially involve meaning, would be developed also in other courses, and be often used in various ways. These gains might thus indeed be genuine and would warrant hope for greater permanency of learnings most worth while and taught in ways most desirable.

In short, forgetting proceeds at different rates for different types of material and in proportion as that material is used or is continuingly significant. The more meaningful and useful the material is, and the more the way in which it is learned brings out its meaningfulness and multiple usefulness, the better the retention will be. Learning will last in proportion as the learner finds it significant and uses it often. That much subject matter is so rapidly forgotten is therefore a tart comment on its value to the pupil.

METHODS OF CHECKING FORGETTING

The exceedingly practical and important question now arises as to how learning may be made more permanent, how more of the results of educational effort may be saved. The problem is complex, and a variety of methods must be considered. They range all the way from slight variations in study techniques to complete reorganizations of courses and even of curricula.

The Importance of Meaningfulness for the Learner.—The obvious first suggestion for checking forgetting is to reemphasize the point just made—what is to be learned should be made meaningful to the student. Even though the material may seem worth while and meaningful to the textbook author and the teacher, this fact is no guarantee that it will seem so to the student. And if it is not meaningful to him, he will learn it in superficial *memoriter* fashion (if he learns it at all), will not understand or use it or really make it his own, and naturally will soon forget it. But if what is to be learned is recognized by him as relevant to his needs and interests and is of such a nature and difficulty that he is able to deal effectively with it, then it is likely to stay with him. That is, the two principles of relevance and readiness, discussed in an earlier chapter, are here of key importance.

Constantly and usually without awareness of doing so, learners evaluate the meaningfulness and importance of what they are learning (if it is sufficiently relevant and the learner in such readiness that this can be done), retain the more significant, and forget the less. For instance, in one study, 86 per cent of the essential ideas of three stories were reproduced correctly after 8 hours, but only 23 per cent of the non-essential items were recalled accurately (36). In another research, students exposed to equal presentations of birth dates of famous people and of nonentities and of definitions of what certain words mean and of what others do not mean remembered more of the important birth dates and of the true meanings (52). Such selective forgetting clearly is desirable since it leaves the learner with the gist of the material studied and frees his memory from cluttering details.

The Effect of Social Participation upon Retention.—Active social participation by pupils in classroom work was stressed in the first part of this volume as desirable for their social development. Such participation also makes for better learning and retention. Significant here is an experiment (13) dealing with three different methods of reviewing geography. The classes used were equated for grade, age, and ability; the geography lessons taught were identical. In one class each child was asked to write a composition on the subject matter covered; this technique was, of course, purely individual and unsocial. The second class was given a review lesson by the teacher; the children participated slightly in this lesson, although their role was for the most part passive. The third class reviewed the work by means of oral discussions among the pupils themselves; in this case, their participation was high. On an examination given later to all three groups, the third class was highest, the second class next, and the first class far below.

A second and somewhat similar experiment compared the learning outcomes of some 700 high school students who studied and discussed or who studied and restudied the problem of releasing convicts from prison in their state (53). Knowledge of best solution and attitudes were measured at the beginning, after reading, after discussion or restudy, and again one month later. The initial reading of the informational selection improved both knowledge and attitude of all types of students. Discussion had a much more marked influence on improving the solution chosen than did restudy. Within the discussion group, poor students gained the most and study groups containing some good students were the most stimulating. At least in terms of the instruments used, discussion or restudy produced no further change in attitude. And retention was greatest after discussion.

TABLE 51.—Percentages of Students Taught by (a) a Detailed Method and (b) a Problem Method, Making Various Grades on a Final Examination (1) at the Close of the Course and (2) One Year Later (10)

Grade on Examination	Close of Course Direction Group	Close of Course Problem Group	One Year Later Direction Group	One Year Later Problem Group
95–100	6	13	..	17
90–94	12	25	20	25
85–89	13	37	30	33
80–84	63	19	40	25
75–79	6	6	10	..

A more intensive experiment (10) covering the reorganization of an entire course was carried on in a home economics class in which the girls were learning to design patterns. Half of the girls were given exact, specific directions for each step of the work, and no deviations were permitted; the other half were given no directions at all, and were allowed to talk over possible plans and try what they liked. As might be anticipated, the girls in the second group produced more unique results and, in general, reacted more favorably to the course. But the major question here is: Which group had the higher actual attainment a year later? Again the results favor the students who participated more in their own training. The detailed facts are shown in Table 51. Special attention should be paid to the distinctly higher retention at the end of a year for those who planned and managed details for themselves. There were no very high or low scores in either group. These results indicate rather clearly that a teacher may hope to improve the retention of pupils in proportion as she allows them to take an active part in their own training and as social discussion enhances motivation and insures comprehension.

Purposive Learning as a Factor in Permanency.—Merely going over material without trying to learn it produces very little result as compared with reading with intent to remember. In one college class a list of 20 words was put on the blackboard and the students were asked to copy it without knowing that recall would be asked for. The same list was similarly copied by a second class but this class was told that recall would be demanded (the amount of practice in copying being the same for the two groups). On immediate recall the second class was 30 per cent better than the first, and on delayed recall over 50 per cent better. In another experiment the results differed according as the learners were told to attempt to remember for a short time only or to try to retain permanently. In this case, retention over a period was distinctly greater.

In the usual school the interest is only in retaining until the final examination. A major purpose of the general comprehensive examinations given in some colleges and professional schools is to create more of an intent to permanent retention. Investigation is needed as to whether such results follow. There is a little evidence that learning and retention are greater in vocational or professional subjects because of the student's expectation of later using such material "on the job." Contrariwise is this question: How much does the feeling held by the average student, that much that the curriculum puts before him is worthless, contribute to forgetting it?

If the learner has in mind as he reads what it is he is actively seeking for, he will be able to study more efficiently and is also likely to remember much better. This fact is illustrated by an experiment with two matched groups, each containing over 80 college students, who read literature and science selections by two different methods (26). Group I was instructed carefully to read and reread the selections; Group II was given a list of questions prior to reading the selections. Recall tests were given immediately after reading and again two weeks later. Each test consisted of the questions given to Group II before reading and an equal number of new questions; all of the questions were, of course, new to Group I. The group that had the questions beforehand did much better on them on the recall tests, the difference being especially great at the end of two weeks (critical ratios ranged from 6.8 to 12.8). And of interest is the fact that on the test two weeks later the group which had read to answer certain questions did as well on questions not specifically studied as the group which had not had directed study.

The Comparative Permanence of Learning by Detail and by Larger Whole or Meaning.—The student who attacks an assignment in terms of its total organization and meaning will learn and remember better than one who goes at the lesson piecemeal—line by line or idea by idea. This phenomenon has long been known but was first associated with rote learning; for example, a poem might be learned stanza by stanza or by reading over the entire poem each time, the first being known as the "part" and the second as the "whole" method. While the problem was thus conceived, controversy raged because some tasks proved easier by the "whole" and others by the "part" method; still others were best handled by a combination—the whole method at first, with the part method applied to hard spots. More recently it has been recognized that the important influence here is that the efficiency of a mode of attack is increased as the meaningfulness of the material is enhanced for the learner. Thus if the material is a "meaningful whole" to him, he will learn more readily than if it appears to be only an aggregate of little related fragments.

Obviously if what is being learned is discrete information to be used separately, such as items of the multiplication table, there is disadvantage in learning the table as a whole; a child might then need to say over considerable portions of it every time he wanted to use any part of it. Here learning by larger meaning requires learning each combination in many applications.

In one series of experiments (44) dealing with learning a wide range or activities, it was found that the greater the degree of internal organization within the material, the greater the efficiency of the whole method. On the other hand, the part method is as efficient (1) when the material is so easy that the learner senses the overall meaning anyway, (2) when the material has no meaning—at least to the learner—and (3) when memorizing a very long selection (23, 28). In another study, children at three school levels learned four poems of increasing difficulty. In this instance, the whole method was most effective, but the poem showing the most marked benefit was different at each grade level; i.e., the higher the grade level the more difficult the poem showing maximum efficiency (37).

It must be repeated that the value of meaningful organization for learning lies in the unit's meaningfulness for the pupil and not for the specialist, the author of the material used, or the teacher. Some enthusiastic and uncritical educators seem to believe that the larger the task in its organizational relationships, the better; subject lines should be broken down and the unit related to the whole world. Thus elementary school projects have demanded the simultaneous learning of reading, arithmetic, spelling, geography, handwriting, language usage, skills in social relationships, the practice of democratic principles, and the suggestion of solutions to social-economic ills of the community. School undertakings with such a larger reference may be very effective, as evidenced by various studies mentioned in this book. But when the student cannot grasp the intent of the unit and the component activities in light of the whole project, he will tend to flounder. Effective use of the "whole method" requires units which have the most meaningfulness and value for the pupils with whom they are to be used. A non-reader in the fourth grade may at first find syllabification and phonics in attacking words the most meaningful method in reading. But for a superior fourth-grade pupil an entire book may be the unit with which he best deals.

Manuals on study methods advise the student to make a general survey of a chapter—noting the introduction, headings, and summary—before studying it in detail, in order that he may obtain a survey of the entire treatment. This process of seeing the entire chapter as a whole affords not only better understanding but also better recollection of the material. In one experiment, skimming a selection before reading it resulted in better retention, although the reading required less time (21); and in another instance (11), recognition of the outline structure of a passage increased comprehension.

But again the larger meaning and the purpose of the learning must be kept in mind. A reference book may be turned to only for a detail. The whole may not be a piece of reading matter at all. Thus a group of students who were studying certain psychological and sociological problems in the schools of a river town began by driving about the place, chatting with townspeople, and looking over the local newspaper. This beginning gave the test results and other data obtained in the schools a much richer significance. Two years afterward these students still mentioned this survey when met on the campus, though most of the reading done as the regular assignments in the course seems largely forgotten. To make school learning part of the wholeness of a larger reality and give it meaningfulness for daily living is the best method of assuring that it will be remembered.

The Value of Distributed Learning.—A relatively simple means for improving retention is to distribute the learning over a number of short periods instead of trying to master the entire task at one sitting. Common sense would accord with the results of research in suggesting that this distribution would be favorable for routine memorizing since in such boresome tasks attention is likely to wander after the first few minutes, and several short attempts with attention presumably fairly high would be superior to long periods with inattentiveness after the beginning. However, the same situation seems to hold for "logical" learning—not verbatim memorizing—as well. In one experiment (33) two groups of adults were called upon to read passages of a technical nature five times—one group five times consecutively in one sitting and the other once each day for five days. A test given immediately after the fifth reading showed a superiority in retention of only 4 per cent for the group using distributed readings; however, at the end of two weeks this group showed 20 per cent greater retention, and 25 per cent after four weeks, as compared with the group who did all their reading in one day. This experiment is suggestive of the effects of cramming—reasonably good immediate recall, but rapid subsequent forgetting. Widely distributed and shorter periods have been found more effective than longer and fewer practice periods in arithmetic addition and subtraction (27); in studying French vocabulary, distributed learning over 10 days was more effective than one long session (45).

In planning distributed learning periods, consideration should be given as to what is done immediately after each period of study. A similar task may interfere with the previous learning. Thus if after learning one poem the student learns a second poem, the memory for the former is much less than if an unrelated activity such as discriminating differences in pitch is carried on (34).

Constructive thinking involving the extensive reorganization of material, creative work, or invention could presumably not go forward efficiently in short periods of time. The study of difficult matter may also require longer periods fully to get into the topic. Probably the more closely a task resembles memorizing, the greater is the superiority of distributing the time, whereas the more it resembles solving an intricate problem, the longer the periods that may be necessary. Even in the study of difficult subject matter, however, distributed shorter periods of work are almost certainly better than cramming.

The Value of Recitation and Review.—Although most readers feel that they understand as they read, tests of comprehension after a single reading have shown as low as 25 per cent success on immediate tests and very rapid forgetting thereafter. There is therefore a dual problem: how to insure adequate understanding from study and how to reduce the rate of forgetting for such material. A student's usual reaction to this problem is to read and reread the lesson until mastery is obtained, but research has shown that a second reading raises the performance over one reading by only about 10 per cent (23). Obviously other techniques for organizing and fixing understandings are needed. The following suggestions have been found successful:

If a passage of reading matter is studied first by reading it through (in terms of certain questions), then reciting to oneself on these questions, then rereading those parts not remembered, again reciting, and so on, the retention will be appreciably better than if one merely reads and rereads without any effort at recitation. Even a single act of recall may have a marked effect, as shown in Chart 83. Over 3000 sixth-graders read a selection and then had their retention tested after varying intervals of time. The groups taking a test immediately after reading forgot 2 per cent after one day and 17 per cent after a week, but the groups not tested forgot 44 per cent after one day and 67 per cent after one week (49). Another study in which 2000 elementary school children worked on spelling and arithmetic showed that recitation during learning resulted in achievement superior to that accomplished by mere reading and rereading of the material (16). Similar results have been obtained with orally presented material (48).

Other forms of recitation are also of value. Pupils trained to outline a text in history have been found to learn more effectively than students of equal ability who did not thus organize (46). Students who read educational statistics but worked problems half of the time did better than those who only read about educational statistics (9). The section on the value of socialization pointed out the benefits of discussion over mere rereading.

If the task is one of memorization—as of a poem—there is still marked advantage in emphasizing recitation. In fact, one excellent experiment showed that spending ⅘ of the time in recitation was the most effective distribution of learning time (20). A recitation method was definitely better in studying French vocabulary than reading the words and definitions (45).

Various techniques may be used to test comprehension, organize the material, and check forgetting, such as having the pupils discuss the topic under consideration, write out answers to questions, outline the topic, take objective review tests. Different methods may vary greatly in effectiveness. In one study a large number of fifth-graders tried writing out answers to a series of problems, completing sentence statements, delivering little talks on the material they were having, and answering oral questions about it. Of these, writing out answers was the least effective, probably because of the slowness and labor involved in writing (4).

The Strategic Spacing of Review.—An examination of curves of forgetting suggests that, since the worst loss occurs during the first day, an immediate review might check forgetting; and this inference seems to be justified by experimentation. Thus, when a lecture was given and never reviewed the class recall averaged only 24 per cent after eight weeks. But if the lecture was immediately followed by a five-minute review test, the recall after eight weeks was 50 per cent better. In an inquiry as to the best time for a review after reading a selection, the results shown in Chart 83 were found. Several thousand sixth-graders were divided into equated groups and then given 4-minute tests at varying intervals after reading a selection. The amount remembered by each group in the first test is shown in the chart by a heavy solid line; it demonstrates how rapid forgetting is for the material obtained from reading if retention is not aided by recall. Each group also took retests at later intervals; the intermediate tests then represent variously spaced reviews. The amount remembered after recall is shown by dotted lines which join the results for a given group on its successive tests. Recall retards forgetting. Comparison of the various dotted lines shows that the closer the recall is to the initial learning the more is retained later. Immediate recall is best, and immediate recall followed by a second recall one day later is better than a second recall seven days later.

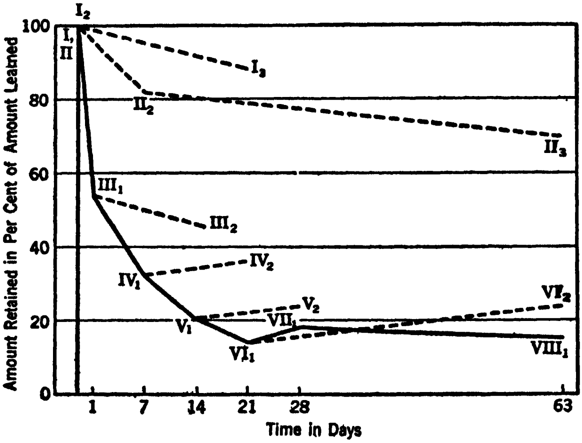

CHART 83.—Curves of retention without intervening recall (solid lines) and with intervening recall (dotted lines) at various time intervals. (From Spitzer [49].)

The first two groups suggest that memory may be kept at a high level by correctly spaced reviews (49). It has often been shown that frequent tests produce better learning and retention; they provide a review closer to the time of learning, aid motivation, and give more reliable knowledge about progress. Short intensive reviews at increasingly longer intervals will serve to keep a function at a usable level of proficiency. If the student's purpose includes, as it usually does, the attainment of peak performance on a later examination, there is good evidence that the amount of review should also be stepped up just before the examination (39). Thus the efficiency of review is increased as it occurs nearer to the time of initial learning or to the time of testing. However, such continued reviewing should be varied, not a mere repetition of the initial learning or testing or recitational recall. In one study 1300 seventh-graders divided into six equated groups read an article on making paper and then each group either reread the selection or took a test at different intervals after the initial learning. A final test was given to all after 42 days. Chart 84 shows that at first a form of recitation is more efficient than rereading but that after a longer interval rereading helps more (47). Other studies have shown in fact (as exhibited in Chart 83) that use of recall two or three weeks after the initial learning has comparatively little effect on memory (50). The implication for the student is that for a short period after reading an assignment it is more efficient to test himself on the material than to reread it. Some weeks later, however, he will do better to reread the lesson than simply to quiz himself or take a test.

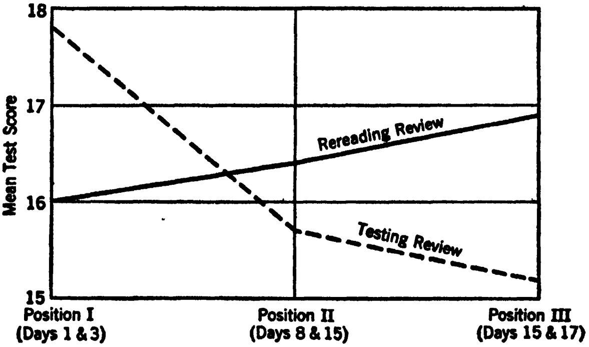

CHART 84.—Relative effectiveness of two kinds of review at three different intervals after initial learning. (From Sones and Stroud [47].)

A variety of materials and methods also makes for better learning and also better retention. When 1700 pupils in science classes were divided into two matched groups, one of which read only the science textbook and the other read supplementary science articles, it was found that the varied reading program produced more knowledge and better memory and was preferred by the students (42). All this is after all only good sense. But teachers often do not thus shrewdly plan their learning and reviews. A little good sense in such tactics of teaching will help a great deal.

REDUCING EDUCATIONAL DEPRECIATION

The permanence of most school learning thus seems slight indeed. Moreover, one is almost tempted to say that in proportion as an ability or attitude or understanding or appreciation is important, research is likely to show that it never really was learned in the first place, and in any case never became such a part of the pupil's psychological being that it remained with him. In view of all the enormous expenditures, the million teachers, and the years young people spend in school, the meager results and their impermanence seem hardly less than scandalous.

The above paragraph may seem caustic. It may be argued in particular that many products of education are below the threshold of recall or recognition but facilitate relearning; for example, the college student may have forgotten how to extract a square root but he can quickly relearn it if it is necessary for use in a physics course, because he originally learned it in the elementary school. These latent results may last over long periods.[5] But surely, in any considered educational economy, such values must be regarded with some suspicion. It may be possible to learn a thing, put it "on ice," and gradually revive it years later when and if needed; however, learning it when needed would be more economical of total time and effort, and much more effective as regards motivation—as has been well exemplified by intensive special educational programs in the Army. The extent to which the less specific "logical" learning of the upper grades and high school may thus remain potential is not clear, nor is the degree to which there might be a transfer of such potentialities, so that, for instance, Latin learned in the ninth grade and then forgotten might help with the French learned for a graduate school examination. Without denying the possibilities here, one may nevertheless be unwilling to be educationally complacent on the basis of them. A school may conceivably serve in still more subtle ways as an environment furthering intellectual development. But such possibilities demand further explication—and again must not operate as a basis for educational complacency.

Why should results be so meager? First to be considered here may well be the irrelevancy of most schoolwork to a youngster's development. As indicated in the first part of this volume, development through the school years is a vigorous, out-reaching, social, active development. School is all too often passive and not social. What the youngster wants the school does not give. For what the school offers he is often not ready.

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[5] Interesting here is the clever experiment by Dr. H. E. Burtt (6), who read certain Greek passages to his small son, beginning when the youngster was only 15 months old. He found that 90 hearings of a passage at this tender age reduced by about one-quarter the number of repetitions necessary to learn the passage when the boy was 8½, and by about 8 per cent when he was 14; at 18 there was no saving. Evidence of facilitation of relearning in adult life of skills acquired earlier (as in typewriting) was presented in Chapter X.

Nor does the program of the conventional school have vigorous enough relations with community life to derive vitality from it. What the school teaches is something apart to the child and community—stuff in books. And a school is often regarded with suspicion if it does reach out and begins to query about local problems or to be interested in what children do elsewhere than in school.

A more vital relationship to both child and community is the need if school learning is to be more than a superficial thing, easily forgotten. The school's program should be based on a broad understanding of child nature and development and be something youngsters and the community need and want—something which both find useful and in which they take pride.

But there are issues of method too, practical straightforward issues having simple good sense to them. It is after all only common sense to review soon after one first learns and to review as one comes near a need for what is thus being gone over. It would be sad, indeed, if intent to remember made no difference. Surely what is learned should be relevant to a youngster's interest and doings and the teacher's job is to make it clearly so. This last is the most important issue of method: if the teacher can only make the pupil see that this lesson on current events or dietetics or art really has importance for him and is used, then instead of forgetting it he may increasingly remember it. The impermanence of school learning is evidence that the learning was so apart from the pupil's life and needs and was so little used that there was no good reason for keeping it in mind.

But, after all, learning should be for other purposes than simply to be able to answer questions about what was learned some time after. The important question is not whether a person can tell what he has learned, but whether he really uses it. First of all, there is the question as to whether what he has learned at one point in school shows elsewhere in schoolwork. For instance, does Latin increase English vocabulary, or geometry so train the mind that problems in science are more clearly understood? But the really important question is not: How does what a pupil has learned show in school? The really basic question is: Does the schooling have any effect elsewhere? Does it make a difference in what a youngster does at home, in town, or on a vacation trip? Does he eat more sensibly or conduct himself more honestly or choose his leisure reading with better taste or have more friends? Does he, as an adult, make a better worker, a better parent, a better citizen, because of his schooling? These larger questions must next be looked at.

SUMMARY

This chapter is one of three concluding chapters which try to determine something as to the results of schooling. America puts immense sums into education. About a quarter of the population is in full-time school. What comes of all this? Is what is learned retained? Does it "train the mind"? Does it bring about wiser living in youth and in adult life? The present chapter deals with the simplest and least important of possible outcomes—the outcome in terms of direct retention of skills, understandings, attitudes, or points of view.

1. The findings regarding the permanence of school learning are, for the most part, distressing. From elementary school to college the evidence indicates that pupils have forgotten most of what they learned of a subject a few months after they studied it. Even minimal essentials, such as the fundamentals of arithmetic presumably well learned in the grades, may present difficulties to a college student. The movies seem to be doing a better job of attitude-teaching than the schools. There is a little evidence that, once learned, more general abilities as in applying principles or drawing inferences may become a more permanent possession of a young mind. But all too often such abilities are not learned in the first place.

2. In general, forgetting proceeds rapidly at first and then more slowly. Most of what is learned in a single lesson may be forgotten by the next day, but thereafter not much more is forgotten for some weeks. Most of what is known as shown by a final examination at the end of a college course is forgotten six months after, but not much more is forgotten two years later. A great deal is forgotten over a summer vacation and must be relearned when school "takes up" again in the autumn. Different subjects and parts of subjects are forgotten at different rates. The most important factor seems to be: How much is this information or skill or understanding used?

3. Forgetting can best be checked by making the learning so useful and meaningful and so much a part of the learner's way of thinking and doing that forgetting is impossible. But certain very practical tactics in learning and review also help. After the first learning, review

should come soon and be reasonably frequent. It should be selective, strengthening any weak spots. It should be varied, associating what is to be remembered with many other matters and especially with circumstances where it is to be used.

4. The impermanence of most school learning is major evidence of its lack of relation to child development. Its permanence can best be obtained by making it serve that development. But a larger view must then be taken. The question is not what is remembered, but what *does* sufficiently become part of that development so that it is used. The next two chapters deal with this question.

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CHAPTER XVII

Outcomes of Schooling: Transfer in School

The problem of transfer of training may well be said to furnish the outstanding example thus far of the central importance of psychological research for educational theory and practice. The problem is basic, and educationally all-pervasive. Moreover, partly because of educational conservatism and partly because of the greater development of destructive rather than constructive research, there is no place in education where the gap between educational science and educational practice, both curricular and methodological, is greater. Work in this field is therefore of great interest, both psychologically and educationally.

THE NATURE AND RANGE OF THE PROBLEM

For an adequate appreciation of the total situation, the great variety of forms under which the problem presents itself must be realized, for the issue is often conceived too narrowly. Furthermore, neither the present educational situation with respect to the problem nor the present very interesting status of experimentation in the field can be understood without historical perspective. What, then, are the range and the history of the entire problem?

The Manifold and Ubiquitous Character of the Transfer Problem.— The problem of transfer may be put thus: To what extent and in what way will the acquirement of skill, understanding, and attitude in one subject or topic or in one type of situation influence skill, knowledge, understanding, and attitude in another subject or topic or in a very different situation? And—an aspect of the problem until recently comparatively neglected—what *constructive* contributions to this exceedingly important issue can be made by psychological experimentation?

First of all, what is the total range of this problem? Most extreme is the belief that some general mental training results from the study of certain disciplinary subjects such as Latin or mathematics. The question is: Do these subjects have a peculiar potency for developing in a pupil habits of attention, acuity in discrimination, and consistency of thinking, so that as a result of the study of these disciplines the individual will deal with any intellectual problem more efficiently than if he had spent his time on other subjects in the curriculum?

Narrower in range but still involving the issue of the comparative extrinsic value of school subjects is this problem: To what extent does the acquirement of skill, information, understanding, or attitude in one subject affect achievement in related subjects? For instance, to what extent does the study of Latin increase English vocabulary, facilitate the learning of French grammar, or foster interest in ancient history? And is Latin a peculiarly fruitful subject in this respect? To what extent does the study of geometry facilitate an understanding of the laws of mechanics in physics or make one more sensitive to balance and design in art? To what extent *does* a course in educational psychology contribute to a better understanding of a course on the teaching of arithmetic or history? A huge total of educational expenditure and effort is based on these two assumptions that there are large general or at least intersubject values.

A recent bulletin of the United States Bureau of Education showed that 16 per cent of all the students in public and private high schools were taking Latin. Presumably almost all these students (except as they were taking the subject simply because of college entrance requirements or other educational circumstances) were studying this "dead" language on the assumption that such values as were mentioned above were large. The freshman curriculum of the conventional college is founded in considerable part upon disciplinary concepts. The reader will do well to look back and see whether these concepts may not have pervasively influenced his own educational program. Parents and school advisers usually seem to assume such values unquestioningly, and apparently students usually feel that "disciplinary" subjects somehow amount to more and do one more good than others (perhaps partly because they are harder). In contrast, only 12 per cent were taking world history, 5 per cent economics, and about 16 per cent courses on government.

Numerous problems of transfer appear within a given subject. To what extent does training in addition help ability in subtraction? If the first semester of a course in Latin is devoted largely to the formal learning of conjugations and declensions, will this help or hinder the acquirement of skill in reading Latin as Latin, for meaning? Do laboratory experiments in physics really help in the general understanding of physical phenomena, or do they sometimes leave the student confused by experimental techniques? Have the numerous requests in this book that the reader relate the topic under discussion to his own experience furthered his understanding of it? All these questions are important, although largely neglected.

The problem of transfer may then be considered almost educationally all-pervasive. It might almost be said that if there is to be education there must be transfer, for the purpose of education is to prepare for meeting situations which must inevitably differ in many respects from the educational situation in which the preparation was acquired. It must also be emphasized that there is involved in the total problem not merely the question of possible educational advantage but also the serious (and largely neglected) problem of educational interference or damage. The study of Latin may have unfortunate effects upon a pupil's ability in English composition—it may develop "translation English," for example. The study of a foreign language, at least by certain methods, may make the reading of English slower. In fact, the total problem of educational facilitation *or* interference is in certain respects the most difficult and complex of all the issues treated in this volume.

The History of the Problem of Transfer.—A word remains to be said about the history of the transfer problem. It has often been pointed out that the subjects thought of as disciplinary were first put into the curriculum primarily for practical reasons. Latin was taught because it was the language of scholarship and the common medium of intellectual exchange. Mathematics was related to surveying and navigation. Only as conditions changed so that certain elements in the relatively static curriculum no longer had an obvious usefulness did the concept of mental training as a vindication of these subjects become prominent.

The earlier experimental work, essentially critical in character, was a sharp reaction to the extreme theoretical vindications of a conservative educational program. Learning was the acquiring of a huge number of specific and largely independent associations, and the possibility of general training was minimized, or practically denied altogether.

Within the past few years, however, the tone of the research seems to have changed somewhat from the critical to the more constructive. Granted that curricula should be based on intrinsic values, the importance of developing interrelations between subject matter, and habits and attitudes of some general applicability, is being recognized. The research question then is as to how this interrelating may be furthered and general habits be developed and made to function widely. The treatment given the subject in this chapter will aim especially to stress this constructive problem, and it will be further developed in the chapter following.

EXPERIMENTAL PROCEDURE FOR THE INVESTIGATION OF TRANSFER OF TRAINING

How can this exceedingly complex topic be investigated experimentally? The procedure may best be made clear by a concrete example. How, for example, can the effect of the study of Latin upon the size of English vocabulary be determined? An excellent study of the matter involved the following steps:

The Experimental Setup.—The problem was put very concretely: Do high school freshmen who are studying Latin gain more in English vocabulary during their first year than freshmen not studying Latin (38)? The first step was to give an English vocabulary test during the first few days of school to a large number of freshmen who were just beginning the study of Latin and to another large group of freshmen who were not taking Latin. In Table 52 the first row of figures shows the average score of these two groups on this "pre-test."

TABLE 52.—Score on English Vocabulary Test, at Beginning and End of Year, of 717 High School Freshmen Who Were Taking Latin, and of 677 Who Were Not (38)

	Latin	Non-Latin
Pre-test	21.6	16.8
End test	28.3	20.2
Gain	6.7	3.4

Net gain of Latin over non-Latin students, 3.3

During the year, the freshmen Latin students undoubtedly had whatever advantages might come from the study of Latin, whereas the non-Latin students did not. At the end of the year another form of the English vocabulary test was given. The second row of figures in the table shows the score on the second or end test, and the third row shows the difference between the scores on the initial test and the final test. As will be observed, both groups made a gain, but the Latin group gained more than the non-Latin group. The difference between the two gains, 3.3, may be considered to indicate the net effect of the study of Latin upon English vocabulary.

The Important Elements of Technique in Experiments Regarding Transfer.—The above experimental attack seems simple and straightforward. However, each feature is important and the technique has been only gradually developed; moreover, as will be seen later, still further refinements are necessary for the most adequate investigation. But what is the special purpose of each feature in the experiment outlined above? Why, in the first place, was the control group necessary; why might one not simply give a group about to take Latin an English vocabulary test at the beginning and end of the year, and assume that any gains made were due to the study of Latin? This would be obviously incorrect because some gains would be expected in any case from the pupils' total experience during the year, in school and out, and the control group shows how much may be expected as the result of such factors. Therefore, only by finding the difference between the gain of the Latin group and of the control group can one obtain some indication as to the special contribution of the study of Latin.

Why not merely give the two groups a test at the end of the year and see whether the Latin group scored higher than the other? For one thing, it is desirable to know how much gain is made over a given period of time (in this case, one school year). But there is another reason, often very important. It will be noted that, on the beginning test, the Latin group averaged higher than the non-Latin—they scored higher at the beginning of the year than the non-Latin group did at the end; in other words, the Latin students knew more English words *before* studying Latin. This was doubtless due to various factors. They may have been more interested in language and literature and in consequence have acquired a large English vocabulary. They may have averaged a bit higher in intelligence; the more intelligent group would presumably have already learned more English. As a matter of fact, most investigations have shown students who take Latin to average slightly higher in intelligence than those who do not.[1] Clearly the results on the final test cannot be adequately interpreted without the results on the beginning test.

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[1] This appears to be due to a variety of selective factors. The Latin students are more often planning to go to college; they take Latin sometimes because it is required by the college of their choice, sometimes because it is the academic thing to do, sometimes because they believe that the subject has "cultural" value. And high school students planning to go to college average slightly higher in intelligence than those who do not plan to go. Intelligent students more often have a parent who is a college graduate, who took Latin as a matter of course in the restricted curriculum of his day, and consequently assumes that his child should take Latin. Thus perversely do the most intelligent and well-educated groups hold to the most conservative and least vital educational programs!

Many misconceptions have resulted from the neglect of such selective factors. Thus a higher percentage of classical than of non-classical students take honors or make Phi Beta Kappa. But these facts may be the result of a higher intelligence in the classical group, or of other factors independent of the classical training. A comparison of the grades of classical and non-classical students in the last years of elementary school, before any Latin was taken, may show about the same average superiority of the one group over the other. In connection with this problem Chart 85 is of interest. It shows the median grades each year in high school English for students taking Latin as compared with pupils taking German, and of students taking two, three, or four years of Latin. The superiority of the Latin students is in each instance substantially the same at the beginning as at the end.

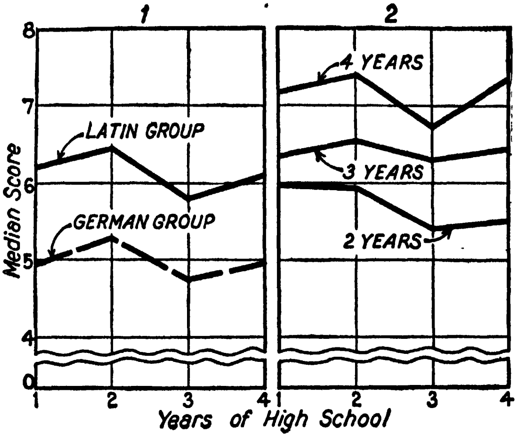

CHART 85.—Median grades in English in the four high school years of students taking Latin or German (first chart), and of students who had 4, 3, or 2 years of Latin (second chart). (After Wilcox, from Starch, *Educational Psychology,* by permission of The Macmillan Company, publishers.)

Because of these selective factors which make the entire experimental and control groups not wholly comparable, it is often best to make the final comparisons only between cases in the experimental and the control group who scored the same on the initial test. That is, in handling the final results, a Latin student who made an initial score of 17 is paired with a non-Latin student who also made an initial score of 17, and so on. Thus the gains of students who started from the same point are compared.[2] It is often desirable, where the number of cases is sufficient, to pair not only by initial score but also as regards intelligence, sex, age, average previous schoolwork, or other possibly significant factors. The more factors thus equated, the more clearly can the influence of the special training in question be determined.

The typical experiment in transfer of training involves, then, an experimental or trained group and a control group to whom are given an initial test and a final test. On the initial test the two groups should be so equated as to make them comparable in initial standing on the ability in question. Each one of these experimental features is important; each one expresses a precaution necessary in considering problems of transfer.

Refinements of Technique.—The procedures described above are basic for investigation of the transfer problem. However, certain refinements are desirable for its further elucidation.

TABLE 53.—Gains from Beginning to End of Freshman Year of 717 Latin Pupils and 677 Non-Latin Pupils (a) on 25 Words Derived from Latin, and (b) on 25 Words of Anglo-Saxon or Greek Derivation (38)

	Latin Derivatives	Non-Latin Derivatives
Latins	5.5	1.2
Non-Latins	2.0	1.4
Superiority of Latins	3.5	−0.2

First of all, what is the range of the transfer? Does the study of Latin, for example, cause a general increase in English vocabulary, or only an increase in the knowledge of words of Latin origin? The investigation used above as illustration permitted a neat analysis of this point. The English vocabulary tests used consisted of 25 words derived from Latin words frequently met in the usual high school Latin course, and 25 words derived from Anglo-Saxon or Greek. It was therefore necessary only to keep separate results on the Latin and non-Latin derivatives to get evidence on this question. Table 53 shows the results of this analysis. The gain is on the Latin derivatives. Evidently the effect of the study of Latin is not to develop some mysterious "language sense" but to acquaint the students with certain Latin roots which they recognize when seen in English words.

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[2] In the study of the effect of Latin on English vocabulary referred to above, the results were handled by a pairing method as well as by the simpler technique used as illustration—but with little change in the findings.

A second special technique concerns a practical consideration which naturally follows from the findings just mentioned. If transfer from Latin to English vocabulary is a matter of seeing that certain roots are common to the two languages, then it would seem reasonable to suppose that if a teacher of Latin made a special effort to call the attention of her pupils to Latin words which had English derivatives, to mention these derivatives and show the relation between the Latin and the English words, the transfer might be appreciably increased. Table 54 summarizes an experiment with reference to this question.

TABLE 54.—Year Gain in English Vocabulary (a) in Latin Classes Taught by Conventional Methods, and (b) in Latin Classes Taught with Emphasis upon the Relations Between Latin and English (20)

	Latin Derivatives	Non-Latin Derivatives
Conventional Latin	4.05	2.77
Latin with word study	8.12	3.49
Difference	4.07	0.72

It shows the gains, over a period of a year, in English vocabulary as determined by the same test used in the experiments described above (the Carr test), containing 25 English words derived from Latin and 25 from Anglo-Saxon or Greek. In the second group one-fifth of the time each day was devoted to teaching the derivation and history of words. There were 118 pupils in each group, paired according to score on the Terman group test of intelligence (20).

The method of teaching is evidently a very important factor in transfer; if there is "teaching for transfer" the amount of transfer can be markedly increased. However, the transfer is almost exclusively on words derived from Latin.

Such an experimental procedure can be extended so as to compare directly several teaching methods. It might be inferred, for example, that if in English classes special attention were devoted to word study, greater gains in English vocabulary would be made than would be the case in the conventional English class. The total experimental question might be as to which of four methods (conventional English class, English with word study, conventional Latin class, Latin with word study) produced the greatest gains in English vocabulary. Table 55 summarizes such an experiment; a total of about 500 pupils were involved, the groups being roughly equated on the basis of the Terman group test of intelligence. Apparently English classes with word study are better for the purpose in question than conventional English classes, but the Latin classes with word study were most effective. However, another investigation showed the greatest gain for classes in English with word study.

TABLE 55.—Comparative Gains in English Vocabulary in One School Year Achieved by Four Different Methods (20)

	Gain
Conventional English classes	6.0
English with word study	8.5
Conventional Latin classes	6.7
Latin with study of derivatives	10.7

Evidently such special techniques as are described in this section are of great constructive value educationally in showing factors involved in transfer, and in evaluating various methods of instruction. These studies are excellent examples of the constructive approach to transfer problems which was mentioned at the close of the first section of this chapter as characteristic of the newer work in this field.

EXPERIMENTAL FINDINGS REGARDING TRANSFER OF TRAINING IN THE SCHOOL SUBJECTS

What, now, are the experimental findings regarding transfer of training in different school subjects? A great variety of topics have been investigated in this connection; however, the most adequate work has been done in foreign languages.

Transfer of Training in Languages.—Data have already been presented to show that the study of Latin tends to increase the size of English vocabulary, that the increase is almost wholly in words derived from Latin, and that the amount of the increase depends in large part upon the method of instruction used. A parallel investigation has been made of the effect of the study of French upon English vocabulary (44). The test used was similar to the one described for Latin—half the English words were derived from French, and half were non-French derivatives. In the schools covered in this investigation there were three groups of pupils: those who took no language, those who took beginning Latin, and those who studied beginning

French. The experiment was very carefully carried through. The results, however, were most disconcerting. They are summarized in Table 56. For all three groups the gain was negligible on the English words not derived from French. On the French-derived English words, the greatest gain was made by those who took no language! Doubtless in all three groups greater gains in English vocabulary could have been made if there had been a special attempt to bring in English word study. But when these results are considered along with those of the Latin investigation, we are forced to the conclusion that gains in English vocabulary do not necessarily follow from the study of a related foreign language.

TABLE 56.—Average Gain Made on French and Non-French Derivatives by Three Groups of High School Pupils (44)

Students Studying	French Derivatives	Non-French Derivatives
No language	2.44	0.63
Beginning French	1.32	−0.46
Beginning Latin	2.03	0.34

Another investigation dealt with the transfer obtained from the study of a modern foreign language to speed and comprehension in reading English, and understanding of English punctuation, sentence structure, grammar (rules governing various usages), and language (location and correction of grammatical error) (41). The results are reported separately for students with high I.Q., those of average ability, and those below average in general ability. Table 57 shows that students with a low I.Q. who did not take a foreign language tended in general to gain more than those who did; this result might be explained on the hypothesis that the study of a foreign language tended to confuse these students with regard to their own language. For the students with an average I.Q. the results are indeterminate. The intellectually superior students appear to have obtained appreciable transfer value from their foreign language. This greater transfer on the part of the superior students is a finding of much importance and will be found in other investigations to be reported shortly.

It was mentioned in the introductory section of this chapter that in some instances transfer effects might be not beneficial but deleterious—the study of one subject might interfere with work in another subject. This may be the effect of Latin upon English. At least when the English used by fourth-year students in translating Latin was analyzed, the proportion of "translation English"[3] and English with no meaning was distressingly high, i.e., over half of the translations. It is not known how much this awkwardness may carry over into English composition, but such writing and thinking are not helpful at least. It has been found that the study of Latin improves ability to spell certain English words derived from Latin —such as words having Latin plurals, like *alumni*—but not words derived from other sources than Latin. In fact, such training sometimes confused pupils about the spelling of words not derived from Latin.

TABLE 57.—Difference in Gain Made on Six Tests of Reading and English by Pupils (a) Studying a Modern Foreign Language, and (b) Not Studying Any Language (41)

	Difference in Scores [a]		
	Pupils with Low I.Q.	Pupils with Average I.Q.	Pupils with High I.Q.
Reading—speed			
High school sophomores	−14.6	−18.4	+19.8
High school juniors	− 7.9	+ 2.8	+ 4.6
Reading—comprehension			
High school sophomores	+ 3.1	+ 1.7	+ 8.9
Punctuation			
High school juniors	− 1.8	− 0.1	− 0.1
Sentence structure			
High school pupils	− 1.1	− 0.2	− 0.6
Grammar			
High school pupils	− 1.2	− 1.5	+ 3.0
Language usage			
High school juniors	− 4.8	− 1.4	+ 3.7

[a] Plus differences are in favor of the pupils studying a modern language; negative differences are in favor of the non-language students.

Students who have had Latin do hardly any better in French than students without Latin; but if teachers in both Latin and French try to correlate the two languages, the transfer is increased (9).

So far the discussion has dealt with transfer from one language to another—from Latin and French to English vocabulary and composition, or Latin to French. Are there values of a more cultural sort? Does the study of a foreign language, for instance, give a unique understanding of the history, customs, country, and culture of the race or nation whose language is being studied? Such values are evidently not so easy to get at experimentally. But some significant work has been done on this problem. For example, a test on Roman history given to Latin and non-Latin high school juniors showed the Latin group superior, as regards knowledge of the historical facts connected with Caesar's Gallic Wars and the orations of Cicero, over the non-Latin group who had not had ancient history, but about the same in score as the non-Latins who had taken ancient history. The same test given at the end of the sophomore year also showed superiority of the Latin over the non-Latin pupils, but this was slight as regards the larger historical implications. However, emphasis in the Latin classes upon historical implications brought larger gains (9).

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[3] Such statements as "So much did I accomplish when you were repulsed by the consul as an exile you are able to ruin the republic and to vex the consul and that this crime committed by you should be called piracy rather than war" (25).

On a test on classical references and allusions, Latin pupils gained less than non-Latins until the end of the sophomore year, but after that gained more. This result was presumably due to the bareness of the first two years of Latin as regards material fruitful in this respect (9).

Such a finding and inference lead naturally to the question as to how much material regarding history, social life and customs, art, and national characteristics, does appear in the reading matter commonly used in foreign language courses. Table 58 is of interest in this connection. It shows the number of times various items are mentioned in three texts commonly read in the first two years of college French. Evidently texts differ greatly in this respect, for little "cultural" value as regards knowledge of French life and customs could be expected from the second, whereas from the first and third much might be derived, especially if the teacher stressed and further illuminated these items (21).

From all these findings, conclusions regarding transfer values in the study of foreign language appear to be somewhat as follows (the essentially negative findings regarding distinctive contributions to general training in reasoning and judgment will be discussed later): As regards the modern foreign languages the situation seems fairly clear. As they are taught at present, such values are too slight to give these languages any great educational vindication; they must find their justification in their own intrinsic worth. French and German and Spanish must be taught because they are useful languages, not because they increase English vocabulary or make similar contributions outside of themselves. Fortunately, modern research suggests that the efficiency of instruction in these languages may be so increased as to

Table 58.—Cultural Content of Three Texts Commonly Used in the First Two Years of French, as Indicated by Mention of Various Items About Literature, History, Customs, Geography, and so on (21)

Categories	French Short Stories		Le Roi des Montagnes		La France et les Français	
	Non-French	French	Non-French	French	Non-French	French
Geography	102	169	259	6	32	175
Literature	26	165	19	19		346
History	26	159	54	15	32	273
Religion		89	19			
Paris		125		13		154
Provincial life		82				
Currency and measurements			9			2
Social life and customs		10				69
Art and artists	15	11			7	122
Education						87
Government administration		13				14
Buildings and architecture						83
Industries						21
Music						69
Language						17
French traits						27
Miscellaneous	62	25	286	3		93
Total	231	848	646	56	71	1552

make teaching them for their own worth much more justifiable than was the case in the past. As mentioned in Chapter XIII, there should be adequate adaptation to individual differences; the work should provide systematically, on the basis of vocabulary research, for the progressive mastery of a fundamental vocabulary; there should be stress on reading objectives, and an escape from the bondage of a formal grammar.[4] If taught thus, three years' study may give such fine facility in the reading of a modern language as a tool that transfer values need not be invoked for the major defense of the subject.[5]

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[4] The writers believe that for formal grammar there should be substituted a functional grammar *for reading* which would be determined by systematic noting and analysis of difficulties in reading, and formulation of explanations for the meeting of these difficulties. Such a grammar would be very different from a formal grammar, and much less extensive.

[5] The material read should, of course, be chosen for its literary or informational value, and be intrinsically vindicable on this basis, *if* the language has been sufficiently mastered so that the students can see through to these values.

Teaching which specifically tries to bring about transfer will increase transfer; consequently, relationships to other languages should be pointed out. A mimimum amount of etymology is interesting in its own right, and is probably a vehicle for transfer. Furthermore, it speeds up learning of the foreign tongue by assisting a transfer from English. But it may well be questioned whether, taken beyond a certain point, this would not divert attention from the major purpose of mastering the language as a tool.

And the significance of the findings regarding Latin? Even the Classical Investigation admits that ability to read Latin is not to be acquired as a tool (9). However, the Investigation (perhaps not entirely unbiased) has found numerous transfer values such as gains in English vocabulary and knowledge of grammar and of Latin words and phrases occurring in English. Various historical, literary, and other cultural values (investigators have found) are not so generally obtained. All these values may be secured in larger measure by teaching for transfer. However, it seems not unreasonable to argue that such instruction tends to make the Latin class also a class in English word study, mythology, and ancient history. There is surely a question as to whether these values cannot be obtained more directly, and much more economically,[6] without the burden of the complicated Latin grammar and syntax. Interesting here is the development of courses in "general language" which aim directly to increase English vocabulary and understanding of language without any such burdens. Perhaps such courses will ultimately take the place of Latin in the secondary school.

Transfer Problems in English Grammar and Composition.—Of interest in connection with the above results, and of great practical significance in themselves are the findings regarding the value of formal

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[6] As will be emphasized in discussing transfer experiments in mathematics, a measure of gain in the practice series is always desirable so that one can obtain some impression as to the proportion of gain which was transferred. In the above-mentioned investigations, such results were unfortunately not obtained. For instance, it would be very desirable to know how many Latin words the average pupil in the average Latin class learns in adding a hundred words to his English vocabulary by the transfer-from-Latin method. Suppose he learns 500 Latin words in 85 hours of studying Latin lessons to gain the 100 English words by transfer from Latin, but could have learned these English words in 5 hours of word study in an English class. Increasing English vocabulary by roundabout thorough study of Latin would then clearly be educationally inefficient. Studying Roman history by reading Caesar and Cicero is surely uneconomical as regards time, effort, and pupil interest, as compared with the direct study of Roman history in textbooks written in English; the fact that the study of Latin brings some gains in both English vocabulary and Roman history does not in sum justify Latin if both gains are made at an unjustifiable price. It is hard to believe that any total of transfer values can vindicate a subject on the educational balance sheet.

English grammar (1) in improving ability to write correct and effective English and (2) in preparing for the study of a foreign language. A study of the correlations shown by 200 high school pupils between a test of English grammar, a test on interpretation of an English classic (Gray's *Elegy*), and ability in English composition showed that they were so low as to indicate little relation between these three abilities (33). A similar study of college freshmen gave similar findings (33).

English grammar is of far greater value as preparation for the study of a foreign language—as foreign language is usually taught, with much use of formal grammar. For example, an investigation of first- and second-year French and Latin pupils showed that those with a poor knowledge of English grammar had only a 50 per cent chance of passing, while those with a good grammatical knowledge had an 80 per cent chance (26). In college, those testing high in a foreign language tested high in English grammar (26). At the writers' institution, study laboratories for probation students have shown the most common cause of failure in a foreign language to be ignorance of the fundamentals of English grammar, and the most effective remedial means to be the teaching of that grammar. An investigation of the relation between years of foreign language study and scores on (1) a test of knowledge of English grammar and (2) a test of ability to distinguish a correct from an incorrect expression in English showed that the study of a foreign language increased the knowledge of grammar markedly, but the recognition of correct English usage only slightly. For instance, high school pupils with three years of foreign language scored 37 per cent better in English grammar than students with only eight weeks of foreign language, but only 11 per cent better in English usage (33). Such results are presumably a back transfer due to the use of a formal grammatical method in the foreign language.[7]

Must we accept the anomalous conclusion that English grammar is of little value for English, but should be taught as a prerequisite for foreign language? Two suggestions are here offered. In the first place, if English grammar were made less formal and more functional—were aimed directly at improvement of written and spoken English—more improvement in English might be hoped for. Many analyses of errors in English have been made, and from them it is clear that the content of this functional grammar would be minimal, stressing only the means for avoiding the relatively few errors which are frequent. It would probably also be more specific than formal grammar, calling attention to the specific sentence situations tending to cause error.[8] In connection with a functional grammar there should be an earnest effort to assure transfer to written English not only in English classes, but also to the English used in other classes such as history. Relevant here is an experiment (26) which shows that eight weeks of a cooperative campaign for better English in all classes of a junior high school resulted in a 25 per cent improvement in the quality of English throughout the school.[9]

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[7] The findings in this paragraph might possibly not hold for a foreign language taught entirely by a conversational or reading method.

The second suggestion is this: that a functional grammar for aiding the reading of a foreign language as suggested in an earlier note, and emphasis upon reading for meaning rather than translation, would make the knowledge of formal English grammar much less important for foreign language study. In short, the anomalous finding that knowledge of English grammar is of value in foreign languages but not in English is a product of a faulty formalistic approach to both subjects.

Problems of Transfer in Mathematics.—It is a matter of common observation that knowledge of arithmetic is relatively specific in character. Thus, 5 plus 9 is harder than 9 plus 5, and 39 plus 5 is still more difficult. Typical of the experimentation in this field is an investigation to determine the spread of practice in the mental multiplication of a three-place by a one-place number (50 problems a day for 14 days) to other arithmetical processes, such as adding three-place numbers, adding fractions, subtracting, multiplying four-place numbers, and dividing three-place numbers (33). The gain of the trained group was 29 per cent greater than that of the control group. An important additional result was this: in the practice series itself, the practice group gained 112 per cent from the first to the fourteenth day! The transferred gains were thus only 26 per cent of the gain in the material specifically practiced. Obviously, the economical way to master any skill in arithmetic is to practice it consistently, *not* to practice some other skill and hope for transfer.

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[8] Thus, in the case of pronouns, the student would be specifically warned of the danger of using the wrong case in such phrases as "between you and me," where the pronoun is separated from the word governing it. In this connection a little *Guide to Correctness in Written Work*, issued by S. L. Pressey and F. R. Conkling, may be of interest. On the basis of extensive error analyses and the consideration of such specific situations as are mentioned above, it appeared that the essential functional grammar could be given on two pages.

[9] Further significant for the evaluation of grammar, though somewhat aside from the consideration here, is an early experiment regarding the possible effects of the study of grammar upon improvement in thinking. No such effects were found; the results were negative throughout (4).

The specificity of arithmetic skills appeared in a somewhat different way in an analysis of multiplication errors of over a thousand pupils in Grades 5 and 6. Twice as many errors were made on certain multiplication combinations when they occurred as part of a problem in long division as when presented by themselves (19). Apparently practice is needed in using or transferring knowledge of multiplication combinations into the long-division situation.

On the other hand, in teaching the 100 addition and subtraction combinations, it is possible to teach only 55 combinations and obtain as good results as when all combinations are formally taught; i.e., combinations are learned as a system of interrelated experiences (27). If addition facts are taught with an emphasis on number generalizations rather than upon drill, the combinations are learned more quickly and better and the students do better on adding larger numbers not specifically studied (34). That is, addition facts are better learned through putting together and counting sets of concrete objects, through comparing these results to previous activities, and in yet other ways building up an integrated understanding of number facts rather than through memorizing combinations as nonsense phrases as one would learn "um" plus "ud" equals "ig."

Drill in arithmetic computation appears not to transfer to problem-solving in arithmetic. For instance, in one experiment 72 boys averaging 10 years of age were divided into two equivalent groups on the basis of a pre-test in "arithmetic reasoning." One of these groups practiced computation thirty minutes a day for ten days; the other group practiced drawing. At the end of this period end tests in arithmetic reasoning showed the two groups to average almost exactly the same; moreover, four such series of experiments agreed in this conclusion (42). Tests of different aspects of arithmetic ability have shown computational ability to be only roughly related ($r + .42$) to the ability to handle quantitative relationships (7).

On the other hand, where some specific procedure is involved, transfer may take place to some extent in any case, and it is greatly helped by specific instruction pointing out this procedure. Table 59 summarizes an experiment with reference to this point (30). Four groups, each of 112 second-grade pupils (the groups being carefully matched as to sex, mental age, teacher's estimate of ability, and score on preliminary tests), practiced simple addition of (1) two two-place numbers (such as 45 + 23), (2) three two-place numbers (such as 52 + 32 + 13), and (3) two two-place numbers plus a one-place number (such as 24 + 23 + 2, in this order). The first or demonstration group was shown only how to do such additions. The second or generalization group received help in formulating general methods of procedure, and these generalizations were constantly emphasized; for example, it was stressed that the numbers must always be written in such a way as to keep the right-hand column straight. In the rationalization group reasons and principles were discussed (that 1's can only be added to 1's and 10's to 10's), but the formulation of general rules of procedure (that the right-hand column should be kept straight) was avoided as much as possible. In the last group, reasons and principles were discussed and rules of procedure were formulated. The end test, which was dictated to the pupils, consisted of the addition of such numbers as 54 plus 322 plus 2. As will be seen, those groups which were specifically led to the recognition and use of general procedures (such as putting down the numbers so as to keep the right-hand column straight) made a much greater gain.

TABLE 59.—Percentage of Transfer Produced by Each of Four Methods of Instruction in the Addition of Two-Place Numbers, to Addition Examples with a Different Number of Digits (30)

Method	Percentage of Transfer	Increase over Demonstration
Demonstration	46.6	
Generalization	67.6	45.1
Rationalization	53.8	15.5
Generalization and rationalization	63.8	36.9

In algebra it has been found that relatively simple changes in an example affect difficulty (35). Thus 6 per cent of a group of graduate students failed to square $x + y$ correctly, but 28 per cent failed on squaring $b_1 + b_2$. Presumably teaching which emphasized general principles and procedures might have prevented some of this unfortunate dependence upon the usual modes of algebraic expression. As in arithmetic, there is the question of transfer from drill to problem-solving. If a problem for the solution of which algebra would be helpful is presented in a way which does not suggest an algebraic formulation, most college students have been found to bumble along without such help. For instance, when students were asked to simplify the algebraic expression $\frac{22x + 5x - 20x}{7x}$, 96 per cent of them did it easily. But when the problem was stated as "22 times 5, plus 5 times 5, minus 20 times 5, divided by 7 times 5," only 4 per cent thought to use algebra (22). Algebra presents many important problems of transfer. For instance, failure to transfer procedures for handling common fractions from arithmetic seems to be one important cause of "special disability" in algebra. (The basic difficulty may often be that fractions in arithmetic never were understood!) How about transfer of work on equations in algebra to physics? What about transfer in geometry? There is a little work to indicate that careful teaching of techniques for dealing with original problems markedly increased ability to deal with originals.[10] But evidence is still needed that ability to deal with originals transfers and (for instance) increases the extent to which pupils apply geometry in science.

That stress on methods of thinking in teaching geometry will show on a test of "reflective thinking" is indicated by an experiment with over a thousand high school pupils in which one group of students took no geometry, another took a regular geometry course, and a third was in special classes in geometry in which emphasis was placed on principles of effective thinking as they appear in geometry. The group not taking geometry gained 4.9 points from beginning to end of the semester on the test of reflective thinking, those taking the conventional course in geometry gained 9.3 points, but those taking the course with stress on methods gained 26.7. Great caution is needed in interpreting these striking findings. Part of the instruction on methods of thinking in the experimental geometry classes may have been sufficiently similar to procedures that would be used in the test to be preparation for it. As in all consideration of transfer gains, the question must be raised as to how much more gain might have been made if effective thinking had been taught in direct connection with reading about science or social problems or current events, rather than in geometry and then transferred. Whether gain on the test means gain in ability to think clearly about problems as they are met in reading or in everyday life might be questioned (the validity of the test is not too well assured). But the importance in teaching of stress on methods of work and attack upon a problem again stands out.[11]

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[10] Such work goes back twenty years and more. See, for instance, E. P. Johnson, Teaching pupils the conscious use of a technique of thinking, *Math. Teach.*, 1924, *17*, 191–201.

[11] That geometry may not be as valuable as is often supposed, even in curricula where it seems to have content as well as training value, was amusingly illustrated in an episode in a well-known school of engineering some years ago. Solid geometry was required

In summary it may then be said that in mathematics also learning appears to be relatively specific. Transfer takes place in proportion as the material is similar, and it is increased if there is teaching for transfer. Two additional points have been brought out: (1) Where possible, gain in the practice series should be determined and then compared with the transfer gains; gains from transfer are usually much smaller than those from direct practice. (2) If general rules and procedures are involved and the teaching for transfer develops them and shows the range of their applicability, transfer is greatly furthered. The writers would especially stress that advocates of the training value of mathematics who make much of the last point should be reminded of the point preceding: the most efficient way to get a gain is from direct practice. Somewhat as the most efficient way to increase English vocabulary is by English word-study rather than through Latin, so the most efficient way to increase systematic thinking in science and in current affairs may well be to teach better thinking direct in these subjects. Experiments on this last point are now particularly needed if hasty conclusions regarding training values are to be avoided—experiments also on the extent to which there is applicational transfer, or carry-over of such training into out-of-school and after-school life. These last questions will be returned to in the next chapter.

Transfer of Training in Science.—Does work in science improve general ability to observe, to think scientifically? Does it develop a general scientific attitude? Significant here is an English experiment in a secondary school science course (24). Three classes, each of 20 boys, were first asked to define 20 words not dealing with science, and their definitions were carefully graded as to merit. All three groups had three lessons consisting of experiments on magnetism. The control group merely answered questions about the experiments. The practice group discussed the results and tried to arrive at satisfactory definitions of the various phenomena they had observed. The "trained"

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for admission. But by accident one autumn a considerable number of students were admitted without this requirement, and the omission was not discovered until after they had graduated. Close study of their records brought to light no evidence that they had, anywhere in their engineering program, done poorer work than students entering with geometry. Accordingly the school courageously acted on the evidence and dropped solid geometry as an entrance requirement. Deliberate trial of such changes in curricula ought to be made—of course, with more systematic check upon outcomes than is possible in unplanned episodes like the above. That students survive omission of a subject with no readily apparent ill effects does not necessarily prove its uselessness. But it is a challenge to make it more evidently useful—and to apply methods of experimental empirical thinking to educational problems.

group not only thus discussed the results, but in defining the observed phenomena they were carefully led to develop criteria and methods for a good definition. After the three days' experimentation, all three groups were asked to define another 20 terms, and these definitions were similarly graded as to merit. The control group was 10 per cent poorer and the practice group 14 per cent poorer, but the trained group was 29 per cent better. The considered development of methods of definition in the science course had had a definite valuable transfer effect.

Another experiment aimed to develop in pupils scientific attitudes of avoidance of superstition and narrow-mindedness, and the tendency to hasty inference. Four months after this training, the trained group, on a test of scientific attitudes, showed a definite superiority (10). Still another experiment showed that a course in psychology caused a decrease in belief in common misconceptions which were discussed in class and also in certain others not discussed. While this change in belief was statistically significant, it was pointed out that from a practical standpoint the changes were not very great (23). Such work is extremely significant. In teaching science there should presumably be a special effort to develop and generalize an understanding of scientific methods and to develop a broad scientific attitude. The indifference, skepticism, or hostility of many teachers of the natural sciences toward scientific work in education is a curious commentary on the extent to which even scientists lack this attitude and understanding.

There are also problems of transfer from one science to another. Various studies (15, 2) indicate, for instance, that the study of general science does not cause students to do better in later science courses than students who have not had a survey course. Little evidence is available as to transfer from one science to another as from chemistry to physics, or from a science like chemistry to home economics, even though a science course may be prerequisite. One study compared the grades in 10 social science courses of students who had had psychology or were taking it concurrently, with the grades of students who had had no psychology. The students were paired on the basis of average grades in all courses the previous year. The students who had had or were taking psychology had unreliably higher grades in 8 and unreliably lower grades in 2 of the courses (23). It should be evident that transfer problems in science have scarcely been touched by research, and that incisive research on these problems might severely jolt teachers of science (if they could be made to transfer their habits and attitudes as to scientific thinking sufficiently to give attention to the applications of science to teaching). But it might also be expected that vigorous constructive research would show ways by which, with careful selection of material and stress on teaching for transfer, the latter might be greatly increased, and such sciences as chemistry and psychology really brought to make the contributions to the later study of related fields that they now assume they do make but apparently do not.

Table 60.—Relative Influence of a Year's Training in Various High School Subjects in Increasing Ability in Thinking (5)

Group of Subjects	Relative Influence
1. Algebra, geometry, trigonometry, etc.	+3.0
2. Civics, economics, psychology, sociology	+2.9
3. Chemistry, physics, general science	+2.7
4. Arithmetic and bookkeeping	+2.6
5. Physical training, athletics	+0.8
6. Latin, French	+0.8
7. Business, drawing, English, history, music, shop, Spanish	0.0
8. Cooking, sewing, stenography	−0.1
9. Biology, zoology, botany, physiology, etc.	−0.2
10. Dramatic art	−0.5

Relative Value of Various Subjects in Training to Think.—There remains the fundamental question as to whether various subjects have different values in training pupils to think and to reason. An extensive and careful investigation of this problem used as end tests materials of the type used in tests of intelligence—analogies, absurdities, and problems in arithmetic reasoning and in spatial relations (5). The question was as to whether different types of subjects, such as those listed in Table 60, caused significantly different gains, over a period of one year, in scores on a battery of fourteen such tests. The table summarizes the results.

The investigator, Thorndike, concluded that "the differences are so small and the unreliabilities are relatively so large that the influence of the subject studied seemed unimportant." Certain further findings in connection with this investigation are also of great importance. The 1 per cent of pupils who scored highest on the initial test made almost 14 times as much gain during the year as the pupils scoring initially in the lowest 1 per cent. The latter gained only 1.5 points, whereas the former gained 20.5 points; the difference between the poorest school subjects and the best was only 3.5 points. Apparently the important factor in the development of ability to think was not the subject studied but the original ability of the pupil. Moreover, where a given group of subjects seemed to produce a large gain, it was because for some reason more of the bright pupils took these subjects. "The chief reason why good thinkers seem superficially to have been made such by having taken certain school studies, is that good thinkers have taken such studies, becoming better by the inherent tendency of the good to gain more than the poor from any study. When the good thinkers studied Latin and Greek, these studies seemed to make good thinking. Now that the good thinkers study physics and trigonometry, these seem to make good thinkers. If the abler pupils should all study physical education and dramatic art, these subjects would seem to make good thinkers. These were, indeed, a large fraction of the program of studies for the best thinkers the world has produced, the Athenian Greeks" (37).

In another study by Thorndike 14,000 adolescents were tested on a series of intellectual tasks before and after a year of varying experiences. Those who had been in school and who took Latin, algebra, geometry, and trigonometry gained 25 points; those who had been in school and who took bookkeeping, arithmetic, cooking, sewing, stenography, or physical education gained 24 points; and those who were not in school but were working at mechanical or clerical jobs gained 18 points. Algebra was thus no more efficient than bookkeeping for general training, and a year in the "school of life" was almost as effective (37).

TABLE 61.—The Relationship Between Number of High School Units in a Subject Field and Grades Earned Later in College (12)

Subject	Correlations	
	Zero Order	Intelligence Held Constant
Foreign language	.17	.05
English	.05	.03
Mathematics	−.02	−.13
Science	−.01	.02
Social studies	−.04	.02
Vocational studies	.03	.11

A related question is as to the value of various high school subjects for college preparation. Required subjects for college entrance are predicated on the assumption that certain courses prepare the student better for college work than do other courses. However, various studies have shown that when students taking quite different combinations of subjects are paired for intelligence there is little if any difference in later college performance. For instance, Table 61 shows the correlation between the number of high school units in a given field and later college grades. The highest relationship ($r = .11$) is found for vocational studies! But this coefficient is not large enough to be reliably different from the others (12).

That there are marked differences among individuals in the extent to which they work efficiently, comprehend adequately, and solve problems is evident from general observation. As suggested above, the basic factor here is innate differences in intellectual capacity. But in Chapter IV, in discussing the nature and nurture of abilities, stress was put upon the fact that the ability a person actually does develop depends not only upon his innate capacity but also upon the adequacy of his information, the extent of his emotional frustrations or facilitations, and his methods of work and of thinking. Repeatedly in the present chapter findings have been cited showing that if what is to be transferred is clearly identified and if there is training for transfer, much transfer can be brought about. And repeatedly the importance has been noted of identifying useful methods of construing a situation or going at a problem, finding how widely useful these methods are, and bringing it about that they *are* used widely. These problems of applicational transfer are so important that the whole next chapter is devoted to them. But first it is desirable to bring together the data and discussion thus far regarding transfer, and see whether certain useful generalizations can be made—so that *they* may transfer and find applications in thinking about educational problems!

THE THEORETICAL EXPLANATION OF THE EXPERIMENTAL FINDINGS REGARDING TRANSFER

The question then is as to whether the experimental findings thus far regarding this total problem can be brought together in any useful theory. The findings may be briefly summarized as follows: (1) Transfer from one subject to another takes place in proportion as the two subjects are similar; thus, the study of Latin increases the knowledge of English words derived from Latin but not of words derived from other languages. (2) Knowledge of a topic is obtained indirectly by transfer from the study of another subject much less economically than by the direct study of the topic in question; for example, it was seen that an improvement of 112 per cent in multiplying brought a gain of only 29 per cent in other processes in arithmetic. (3) Transfer is obtained in proportion as there is teaching for transfer; if a Latin teacher brings out the relations between Latin and English words whenever possible, the gain in English vocabulary is increased. (4) Transfer is most effective where the training develops certain methods, attitudes, and understandings of some general applicability, and where these methods or understandings are generalized and their range of applicability shown.

What theory regarding transfer may be inferred from these and other experimental results? Most profitable practically may be considered the theory of common elements. The study of Latin increases English vocabulary because there are common roots; for example, it is noted that the letters *urb* are common to the Latin *urbs* and the English *urban*. Such a theory would seem to explain the range of transfer and to be suggestive regarding methods of teaching for transfer.

Transfer from Latin to English vocabulary because of common word roots is transfer because of common elements of content. But there may be common elements of method. Thus, the pupils in the English school who learned methods of definition gained markedly in their ability to define various types of words, whereas those who only practiced defining gained not at all. Transfer of this type, involving the development and extension of the range of applicability of useful methods, is *the* important type of transfer and has great potentialities.

There may be transfer if there is a common element—be it fact, skill, or method—in the two situations. But transfer is rarely if ever "automatic." The crude fact that the three letters *u r b* occur together in both *urbs* and *urban* does not assure that a pupil will see a relationship. Transfer occurs only if he is aware of that fact, and the relatedness of meaning. A new situation may have aspects in common with other known ones, but if these commonalities are not perceived there will be little if any transfer. Training in algebra will not transfer to solving everyday problems unless the student realizes that algebra might help. In one experiment, merely telling students that previously learned material might be useful in another situation increased the amount of transfer from 8 to 16 per cent (11). Such awareness is increased by making the commonalities more evident, showing how they may be transferred, stressing the value of transfer, and giving practice in making it.

TABLE 62.—Gains of (a) Practice and (b) Educated Groups over Control Group in Memorizing (43)

	Practice Group	Educated Group
Learning poetry	0.3	6.1
Learning prose	0.8	7.5
Learning facts	0.2	7.2
Learning dates	1.3	8.8
Learning vocabulary	1.0	10.9
Average gain	0.75	8.5

That transfer may be great if the above principles are followed is shown by an investigation regarding training in memorizing. Three groups of individuals were worked with, the groups being equivalent in initial ability to memorize, as shown by tests in learning poetry, prose, facts, dates, and vocabulary. The control group was given no training in memorizing, the "practice" group spent eight periods averaging 22 minutes each in memorizing poetry and nonsense syllables. The "educated" group had the same total amount of time (177 minutes) but only 101 minutes went to practice, the remaining 76 minutes being spent in consideration of methods of memorizing (the value of rhythm in memorizing, of recitation instead of only rereading, and the "whole method"). Table 62 shows the results on the end tests. The "educated" group gained ten times as much as the practice group (43).

In the above experiment the general elements which transferred had to do with methods of work. But such elements may also be attitudes or points of view, as was mentioned in another of the experiments on transfer in science. There may be a spread of emotional attitudes and stresses. Furthermore, all such general elements as methods of work, attitude toward superiors, willingness to "try again," or feelings of confidence or diffidence may have very wide applicability. Here, evidently, are the important problems of transfer—and, in the large, the important problems of a true education. Such elements must be identified—and that not alone in general fashion, but so specifically, by research, that their nature is known. Means for developing them and for studying their range of application must be worked out by controlled experiments. In proportion as such elements are general and wide applicability is desired, the research must be extensive and must include much work on ways of bringing about transfer.

APPLICATIONS OF RESEARCH ON TRANSFER TO EDUCATIONAL PRACTICE

There remains the final task of bringing together the discussion of this chapter into a general statement of applications to educational practice. Here it is natural to consider separately applications to curricula and to methods, although, as will be emphasized shortly, applications to method are clearly dependent upon specific curricular analysis with reference to this problem.

Curricular Problems in the Light of Research on Transfer.—First of all, general training in methods of work, attack upon a problem, and thinking can be attained in almost any subject, in proportion as teaching is intelligently directed to this end. It is not true that certain subjects have some mysterious, peculiar effectiveness in this respect. All subjects can be made to serve this general educational purpose, and all of them can be made to do so much more than at present. As will be brought out later, general training is a matter primarily of method, not subject matter.

Furthermore, the findings in this chapter have directly or indirectly reiterated this theme, that the way to get an educational value is to drive straight for it. If the desire is to increase English vocabulary, the teaching must be directed to that end. If a pupil is to be habituated in correct grammatical forms, not grammatical rules but a repeated consideration of the correct forms is necessary. If he is to learn problem-solving in arithmetic, he must be taught to solve problems instead of being given further work on the number combinations. If there is to be transfer, there must be teaching for transfer. Where transfer has been most effective—for example, in increasing English vocabulary by using a method in Latin that emphasizes the relation of Latin to English—there has been such a taking over of the content of the related subjects into the content of the training subject as almost to amalgamate the two subjects in the respect in question.

Curricula must, then, be constructed with direct reference to the objectives to be attained; subjects can legitimately be kept in the curriculum only for their intrinsic, not for their disciplinary or indirect, value. Though there is transfer and it can be greatly increased, such values must be found within subjects intrinsically worth while. No amount of increase in the efficiency of training for transfer can legitimately lead to a neglect of this fact. Moreover, this fact should be looked straight in the face and acted upon; that it is not constitutes the worst single fault of secondary and junior college curricula. Recognition of the newer findings regarding the possibilities of transfer should not, as it sometimes seems to be doing, divert curriculum builders from this fact.

Applications to Educational Methods.—First to be mentioned here is a fact which has already been brought out. To obtain transfer there must be training for transfer. If one wishes to increase the size of his English vocabulary through the study of a foreign language, he must make a specific attempt to bring about this increase. If he wishes to improve his ability to memorize, he must try specifically to develop better methods of memorizing and show their range of applicability.

To the above paragraph there is a corollary which has been all too much neglected. If there is to be training for transfer, the common elements must be identified so that the teacher will know what elements she should seek to transfer. If she wishes to increase English vocabulary through a study of Latin, she must know when she meets a Latin word having English derivatives, and she must know what these derivatives are. If she wishes to increase the knowledge of French life and customs from reading in French, she must be alert to such elements in the reading and she must know how to develop them. If she desires to improve ability to memorize by practice on certain tasks of memorizing, she must know what elements of method are common to various types of memorizing, and stress these elements and their general applicability. If she hopes to improve the methods of thinking in any subject, she must have specific and research-determined (not merely *a priori* and theoretical) knowledge as to what these methods are. The great need in dealing with the transfer problem is for research which aims specifically at the identification of such elements of both content and method; the preeminent need is for the specific identification of important elements of method and the determination of their range of applicability. Such work has great possibilities. If one is to improve methods of thinking, the all-important research need is for the identification of actual methods in such specific form that they can readily be pointed out as they appear in a given situation and applications to other situations can be specifically indicated. This opens up an immensely important new field for educational research, which will be emphasized in the following chapter.

Finally to be stressed is a third point, also largely neglected. With a given opportunity for transfer, the amount obtained in the case of a particular pupil will depend in large measure upon that pupil's general ability. This is perhaps the most important bearing of research on differences in intelligence: a child's I.Q. is most significant with reference to his capacity for general training. With recognition of this fact and with the identification of common elements of method and emphasis upon training for transfer, there may well be a new general training which will make education many times more fruitful for the bright pupil than it is at present.

SUMMARY

The problems of transfer of training may at first seem confusingly complex, and methods for its investigation too elaborate to have ready bearing on everyday teaching. But in essence the issue is simple, and every detail of the research approach has practical implications for a teacher.

1. In the first place, it should be clear that the problem of transfer of training is of major and pervasive importance. The question is as to the extent to which information, skills, attitudes, or ways of thinking learned in one subject or situation are or may be used in connection with other subjects or problems or situations. Forty years ago it was generally considered that certain subjects like Latin or mathematics had a peculiar potency in developing desirable skills in thinking. Programs of education were founded largely on this concept of mental discipline. More recently psychological research has reformulated the concept and rejected this application. Educational programs and methods are changing accordingly.

2. Experimental procedures in investigating transfer of training are of great importance because of both the results obtained and the extent to which they express issues in thinking about the problem. In the typical investigation there is an experimental group which takes the subject or the training with reference to which the question of transfer value has been raised—takes Latin or algebra or training in methods of memorizing. At the beginning of the experiment the control group should, so far as possible, be similar to the experimental group except that it does not take the subject or the training. Thus if the question is as to whether the study of Latin increases English vocabulary, it is desirable that, at the beginning of the experiment, the group studying Latin and the group not doing so should show about the same English vocabulary, have about the same general ability, and be in other possibly significant respects the same except for the fact that the control group is not blessed with the study of Latin. To both groups at the

beginning and end of the experiment are given tests in the trait with reference to which the question of transfer has been raised; thus beginning and end tests in English vocabulary would be given to both groups to find the effect of Latin on English word knowledge. Transfer is shown by gain of the experimental over the control group on the end test over the initial test. This basic experimental setup may be varied and extended, but the fundamental structure is as above.

3. Practically all investigations regarding transfer show that gains made in one subject or part of a subject as the result of the study of another subject or part of a subject are much less than gains which might be made by studying the desired subject direct. The most effective way to increase English vocabulary is to study English vocabulary. However, related subjects do show transfer. And transfer can be increased by stressing relationships. Particularly important is the fact that attitudes, methods of work, and points of view can be so taught as to transfer. But there are no subjects which have special potency for general training. Thus skill in analyzing words or in outlining can be learned in almost any language or any subject, and they may be transferred if the teacher makes clear how they can be used in the other subject.

4. Transfer of training may most usefully be thought of as occurring when there are elements of either content or method common to the field in which the training is obtained and the field to which the transfer is to be made. There will be transfer in proportion as this commonality, and the possible value and use in the field to which transfer is desired, are made clear.

5. There are, then, no subjects of peculiar training value. But there are ways of teaching which can increase transfer. And there are vital problems of transfer from school to life which will be stressed in the next chapter.

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CHAPTER XVIII

Outcomes of Schooling: Applicational Transfer

The discussion of transfer thus far has dealt primarily with transfer of part of one school subject to another subject, or at its widest with transfer from a course in school to other uses largely academic. But a school does not exist simply to serve its own type of activities, or indeed to foster essentially academic abilities. Schools should have a much broader, more realistic, and more vital purpose. What a school does to its pupils *should* (as mentioned at the beginning of the chapter on permanence of schooling) make a difference in what they do outside of school, and in all their lives after. But here is a problem in transfer: to make what Jimmy learns in the ninth grade affect his choice of the matter he reads in the newspaper, his efficiency in a summer job, his attitude toward the Polish family around the corner, his choice of a vocation, or the way he votes and the way he brings up his children when he is thirty-five. These are as truly problems of transfer as the question regarding the effects of Latin on English vocabulary. They are far more important. In fact, they are so vitally important that they are given the emphasis of the concluding position in this book.

Unfortunately, there is comparatively little material on these all-important topics. However, for the student reader of this volume there is a practical issue of general training that affects what he does both in school and out, on which considerable has been done and in ways having wide applicability. That is, there has been a good deal of very practical research regarding methods of work and study. And here and there in the great mass of more conventional research in education and psychology are to be found significant studies of "out-of-school" effects of schooling. This chapter then attempts to do two things to bring the recommendations to "real life" application. It reports research on methods of work and study, and it brings together certain investigations regarding the effects of schooling not only on what pupils do outside of class but on parental and community doings.

These various data have been grouped under the general head of applicational transfer. The term may be clumsy, but the meaning should be clear.

THE DEVELOPMENT OF EFFECTIVE METHODS OF WORK AND STUDY

Such phrases as "methods of work" or training in "how to study" are general and vague. The first need in approaching this whole topic is to gain some understanding of the concrete and practical factors involved. For this purpose the reader may well first consider the contacts he may have had with the business world, where efficiency is something of a fetish.

He has, presumably, some knowledge of the behavior of the efficient businessman. This man answers correspondence by the next mail. If he is visited on a matter of business he is able to turn at once to a file and find the papers or other records which are pertinent to the issue in hand. If he runs a store, there is little or no delay in waiting upon patrons; delivery of goods is prompt; mistakes are rare. This ideal businessman can be counted upon to deal with a matter without undue delay, to have his business in order, and to have things done when and as he agreed to do them. All this has become so much the tradition of American business that it is called "being businesslike."

Unfortunately, no such tradition is dominant in current concepts of the student (or the professor.) There might well be. To have one's notebook well arranged, to get assignments done on time, to have one's reading on a topic so organized that a coherent contribution to the class discussion can be made—these *are* matters of pride to a few students. However, the average student is frequently behind in his work, his only mode of attack on a lesson is to "read it through," his notes are hastily taken, he often does not know what his assignments are, and he chronically misplaces his books and papers. Inefficiency is not limited to pupils. All too many teachers find themselves hurried and harried by their work. They do not get things done with that carefulness or calmness they had planned. As a matter of fact, even in the business world there is a considerable group of businessmen who have to be prodded if one wants results, who cannot find previous correspondence when needed, who fail to remember conferences, and who, even after repeated reminders, neglect to make a needed improvement. The exceedingly important topic of this first section might be put in this way: How can American children be made businesslike in their studies and be so trained in habits of work that they will become efficient American adults?

The reader will do well to review carefully his own experiences relevant to this topic. He will find it illuminating to spend a few minutes in a library or study room, noting the businesslike methods (or their lack) of students in dealing with their assignments. A simple procedure is suggested: A group of ten students might be watched and a count made of the number of times each looks up in a period of 20 minutes and the number of times each one speaks to a neighbor or moves about. Several notebooks might be glanced at to see how many are in systematic form. And count might be made of the number of students who do not have their notebooks with them and are taking notes on odds and ends of paper—such as the back of an envelope. Or they might be asked how many know the next assignment in each of their courses, and how many have been forehanded enough in preparing a term paper that it can be completed without frantic effort on the last day. Perhaps the observer might note the number of instructors who give back graded examinations promptly and are always on time for class. And he might run over in his mind any business offices he has known, making mental note of their efficiency.

Technique for Investigating Methods of Work.—The first question concerns the research techniques by which one can investigate this rather obvious but nevertheless difficult topic of methods that make for personal efficiency. He can find out how students study by asking them in some detail how they go about their work, by inspecting their notebooks or other papers, by watching them when studying, by intensively observing individual students in a "study laboratory," and by having frequent conferences with them in which they are persuaded to reveal in great detail how their thinking is going forward. All these methods are clearly needed, and all of them have been used.

The next question is to determine from all these data which methods are most effective and which are to be avoided. In some cases, as in the matter of promptness, the desirable procedure or characteristic would seem obvious. But special methods of study, of procedures in attack upon an assignment, of techniques for reviewing cannot be evaluated offhand. The most feasible procedure is to locate one group of students who make excellent marks, and a second group whose academic standing is very poor. Both groups are then carefully investigated by such procedures as indicated above. The percentages of the good and poor students who use each method are then determined and the two figures compared; the methods used by a large percentage of the excellent students and a small percentage of the failing students are considered the significantly superior methods.

This research technique is inadequate in that when teachers give marks they are all too often biased in favor of the docile as compared with the intellectually original and vigorous student, and know little concerning the effectiveness of a student outside the somewhat narrow situation of the schoolroom. In dealing with this whole problem, information is greatly needed with regard to successful as compared with unsuccessful methods of work in adult life. There is need for sedulous Boswells with psychological training who would stay constantly with well-known men, generally recognized as outstandingly competent, to note what they do and how they do it. These same investigators should also study the methods used by men who go bankrupt, so as to make contrasts between adult failures and adult successes. Such study would presumably yield information of much general interest and of great significance to education as a guide in making school training more effective and more in harmony with the needs of adult living.

Comparison of good and poor students may not bring out the best methods of work since even good students may not use the best possible procedures. For instance, turning bold-face headings in textbooks into questions for which the reader seeks the answer has been shown to speed up reading and improve comprehension. But taking out such headings had no discernible effect on the reading rate or comprehension of a group of above-average college freshmen; apparently none of them were accustomed to using headings as guides in reading (40). One has to look to expert editors and professional men for examples of the high levels to which reading skills may be raised, as in scanning material very rapidly (a page at a glance, as the exaggerated phrase is) but with high comprehension. And even these experts may not, by their trial and error self-instruction, have come upon the best possible methods. Somewhat as motion studies have shown ways of improving the work of even expert bricklayers, so improvement might be found even in present-day "best" methods of reading.[1] And training in study methods might make even the present best better.

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[1] Certainly improvements in typographical layout would help. One of the writers in publishing textbooks has long made use of tables of contents in systematic outline form with pages indicated for chapter subdivisions to aid review, and of headings and subheadings and small-type subordination of less important matter, as in this volume. He wonders if the reader has thus far made any use of these features—or even noticed them! He has advocated chapter summaries at the beginning of the chapter for pre-view rather than at the end, but never quite had the courage to put them there. The front page of a newspaper is far better arranged for ready reading than most books. But improvements are possible in newspapers.

Surely the schools' best may often be bettered. For instance, recent studies have shown that present "expert readers" in elementary schools often tend to be gullible believers of what they read; they do not select what would be most useful on a project or discern which matter is truest or best prepared (21, 49). Students rarely do more than read or reread a lesson. Yet studies cited in the chapter on the permanence of schooling showed the value of self-recitation to check comprehension, organize the important points, and fix the comprehended material in memory.

Even good students do not know how to find and use source material. Some graduating seniors in college have never or rarely used any other library resource than the Reserve Desk—where one merely has to ask for the book. Most students have developed little skill in using other persons for obtaining ideas (except occasionally for cribbing on exams), or in discussing points at issue to bring out pros and cons and try out their ideas. Committee action is more inefficient than it need be because so few know how to work with others effectively.

Findings Regarding Efficient Methods of Work.—What are the findings of research regarding best methods of study? Table 63 summarizes a very simple and straightforward investigation as to the comparative effectiveness of methods now commonly used, for academic success as shown by good marks. An inquiry form regarding methods of work was filled out by 200 college students, and answers of the 50 having the best academic record were compared with those of the 50 students with the poorest average marks. The inquiry form included 125 questions; only the 18 points given in the table appeared differentially significant (37). Clearly such findings need supplementation by other methods of investigation such as were mentioned above—for instance, actual observation of students' methods of work and trial of various methods in study laboratories. The considerable number of investigations of this total problem seem substantially agreed on the following points as important for efficient study. To make these conclusions more valuable to a student, they are given in the form of simple rules for effective work.[2]

1. For effective work, certain prerequisite conditions are important.
    a. Failing students frequently show physical handicaps or poor health; guard your health and keep in good physical condition if you would work efficiently.

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[2] Reference (39) will be found for further help in this connection. The reader may notice that these rules are in close agreement with the earlier discussion of health, emotional strain, control of learning, and the hygiene of work. To a certain extent they are a statement of the main points of these chapters in the form of rules for the student's guidance.

TABLE 63.—Showing the Percentage of Failing Students Answering Each Question in Excess of the Percentage of Superior Students (37)

	Answer	Per Cent
A. Study Environment and General Routine of Study		
1. Do you usually study every day in the same place?	No	36
2. Do you have a daily plan of work?	No	24
B. Reading		
1. Do you frequently skip the graphs or tables in your textbooks?	Yes	40
2. Do you frequently make simple charts or diagrams to represent points in your reading?	No	40
3. When you find a word in your reading that you do not know, do you usually look it up in the dictionary?	No	32
4. Do you usually skim over a chapter before reading it in detail?	No	28
5. Do you usually have trouble in getting the meaning of a chart or table?	Yes	28
C. Note Taking		
1. Do you keep your notes from one subject together?	No	32
2. Do you usually take your notes in class just as rapidly as you can write?	Yes	32
3. Do you usually take your notes in lecture in outline form?	No	28
4. Do you usually take your notes on reading in outline form?	No	28
D. Self-expression		
1. Do you usually have difficulty in expressing yourself in written work?	Yes	56
2. Do your teachers frequently complain that you do not make sentences when you write?	Yes	28
E. Examinations and Reviews		
1. Do you sit up late the night before an exam studying?	Yes	40
2. Do you often write the answer to a question, only to find that it is the answer to some other question on the examination?	Yes	32
3. In preparing for an examination do you try to memorize the text?	Yes	28
F. General Attitudes		
1. Do you frequently try to analyze your work and try to find out just where you are weak?	No	36
2. Do you frequently use the facts learned in one course to help you in the work of some other course?	No	28

   b. Emotional strain is often a basic cause of failing work; try so to order your existence that problems of emotional adjustment are not critical, or obtain some assistance in thinking through such problems.
   c. Try to find a quiet place for work free from distractions and interruptions. There should be adequate work space, even illumination, and an absence of distracting photographs, football schedules, and mementos in the immediate range of vision.

2. Businesslike methods in using time are very important for efficiency.
   a. Learn to plan or budget your time. If possible, have a regular daily schedule for work. At least plan ahead so that you use your time effectively.
   b. Studying the same course at the same time and in the same place each day develops certain time habits which make it much easier to concentrate. Set definite time limits on studying. It is much easier to keep yourself studying for two hours than to devote "an evening to study."
   c. When you sit down to work, do not fiddle or procrastinate; begin at once. Many inefficient workers show as a major characteristic inability to settle down to work.
   d. Plan so that when you are about to do a piece of work you have the materials necessary. Have a notebook and form the habit of keeping it with you. Plan ahead sufficiently so that any books you may need will be with you when you need them. Failing students are characteristically irresponsible in such matters.
   e. Plan ahead so that you do not have to exhaust yourself in last-minute preparation for some examination or other task. Under such circumstances, poor students frequently sit up late at night, eat irregularly or miss meals, and neglect recreation. All this is poor economy.

3. Skill in "selective reading" is exceedingly useful and time-saving, both in schoolwork and in adult life. Read with your head, not your eyes; i.e., think and organize, don't just recognize each word!
   a. Always make a preliminary survey of any material before reading it, to find the general organization and main points. Make use, for this purpose, of table of contents, topic headings, summaries, and similar aids. Change headings into questions and look up the answers. You will be surprised how many questions on the next quiz you will have specifically prepared for.
   b. Be sure you understand graphs, drawings, tables, formulas, and similar means used to summarize data; a common fault of poor students is neglect of such material.
   c. Do not skip technical terms; look them up. They are essential to understanding the subject.
   d. Look away from the book at the end of each section—usually indicated by a new bold-face or italicized heading—and see if you can distin-

guish what the important points were and how they apply to what you already know. This form of self-recitation insures that you really understand the material, and the active recall helps fix the points in your memory. An efficient way to recite is to write out brief notes in the manner next to be described.

4. Methods of making and keeping records are an important element in efficiency in almost every form of mental work.
   a. Take notes, on both reading and lectures, in brief, systematic outline form. Poor students characteristically try to take down everything the instructor says, and their notes are simply one thing after another, without any distinction as to comparative importance or organization. Good notes give a bird's-eye view of the lesson.
   b. Take notes in your own words, with any comments which may occur to you; do not try to record verbatim the lecture or reading.
   c. Keep your notes on one subject together, and assignments and notes in such order that you can readily find what you need when you need it. Notes which cannot be found readily are hardly better than no notes at all.
   d. In looking up references for a report or topic, use cards and the usual library form of giving reference so that your material can be easily added to or rearranged.
   e. Learn to use the short-cuts provided by library aids—dictionary, card catalogues, indexes, encyclopedias, abstracts, bibliographies, etc.
5. In any undertaking, a periodic review and appraisal of what has thus far been accomplished are necessary for efficiency.
   a. Spend some time regularly on a review of your work.
   b. Review *selectively*. Poor students read frantically over all their material (if they review at all). Good students think over their work, and review only those points in which they are weak. They thus save time *and* accomplish more.
   c. In reviewing, relate the material to your own experiences and to work in other courses, and apply it.
6. Good students are distinguished by the systematic way in which they write examinations and reports.
   a. Always outline a report or an answer to an essay-type examination.
   b. Always allow time for reading over a report or examination before turning it in. You will thus catch mistakes and poor expressions which would otherwise escape you.
   c. Always read over all the questions on an examination before beginning to write, so that you can plan your time and coordinate your answers.

Training in Methods of Work.—On the basis of such data as have been mentioned, there have been developed in many institutions programs designed specifically for training students in efficient methods of work. It early became clear that merely lecturing students about such methods did little good; classes of a laboratory type are necessary.[3] Usually these laboratory classes are designed especially to help students who are having difficulty with their schoolwork. The methods used in such a course may be inferred in considerable degree from the discussion above. The first effort is naturally to find the causes of each student's difficulties.

At the beginning of the course the instructor has an interview with each student in which the total circumstances regarding any trouble that student has with his work are sympathetically inquired into. To this interview the student may bring a blank which he has filled out, concerning what he considers his problems to be; and the interviewer pursues this inquiry further, using various diagnostic devices. If necessary, a physical examination may be arranged for through the student health service. Something is found out also regarding any emotional problems with which the student may be wrestling: there may be some trouble in relations with the home, some incompatibility in the rooming house or fraternity, some unhappiness in connection with social isolation from campus affairs. As has been previously emphasized, all such factors influence mental efficiency; they are still more important in a broader educational program which considers the student's total welfare.

Inquiry is next made regarding the nature and origin of the student's immediate academic difficulties. He is asked for his own interpretation of his troubles in the courses he has failed, and inquiry is also made of the instructors concerned. Tests may be given in various background preparatory subjects. For example, if the student is having trouble with science, tests in arithmetic may be given to see whether deficiency in this subject may be a factor. If the trouble is with a foreign language, inquiry is made regarding grammatical background. Questions are asked regarding the secondary school training. The student takes various reading tests and his notebooks are looked over. In short, every effort is made to obtain an understanding of the total academic problem.

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[3] Because of a lack of knowledge of their own problems and a tendency to overestimate their own abilities, students usually obtain but little help from lectures and readings on such topics. Thus in one study, two classes were told that they could use their notes when the examination was given on a certain unit. One of these classes was then given a lecture on how to take notes, the other was not. The examination showed no reliable difference between the two classes; the instruction on note-taking had done little good (13). In a semester orientation course, lectures and readings on how to study did not cause the students enrolled to get any higher grades than a control group; the enrolled class did, however, know more facts about how to study, but for what value (5)? In counseling with reference to *skill deficiencies* the analogy of coaching in golf is useful. As in golf, a trained observer may see flaws in another person's methods, suggest suitable remedies, and help to get them into the stroke. But the dub can't do much for himself.

Once such information has been obtained, the remedial program is begun. Obviously most difficulties are so individual that the remedial work must also be highly individualized. If health is a factor, attempts are made to improve it. A sympathetic effort is made to adjust or solve emotional problems. If deficiencies in the tool subjects, such as arithmetic, are a factor, practice materials are provided.

Inefficient methods of work and study are usually a factor. In this connection, the student is asked to make out a time budget or schedule of work. He is shown how to outline, how to attack a reading assignment, how to take notes. For practice on these points he brings to the laboratory the textbooks in the subjects with which he is having difficulty; and the instructor sees to it that he settles down to work quickly, applies himself steadily, makes use of topic headings, and takes notes in satisfactory form. The instructor does little in the way of classroom teaching, beyond explaining from time to time how notes and other routine procedures should be handled. Most of the time he moves about the room, talking with this or that student, looking over his work, and helping individually in every way he can.

The Results of Efforts to Train Students in Methods of Work and Study.—What are the results of such efforts individually and specifically to give students help in dealing with their problems? The sample data in Table 64 are of interest in this connection (37). They compare the academic record of a class of 31 students who were given such training, with the record of a control group of 31 other students who were also in academic difficulty; each one of the control students was paired with one of the students receiving help, as to intelligence, academic record previous to the probation quarter, age, and sex. The practical question then is, how much better did those students do who were taking the study laboratory, during the quarter when they were in this laboratory and also subsequently? Table 64 tells part of the story; it shows the percentage of the total work taken by the students in each group, on which they made either A (very good), B (good), or C (average). Whereas the control group gained only 7 per cent during the probation quarter in proportion of work which was average or above, the group in the "how to study" laboratory gained 45 per cent. It would seem clear that the students who were given this help did actually profit by it.

Table 64.—Percentage of College Work of Two Similar College Groups Which Was A, B, or C the Quarter Before Going on Probation and the Probation Quarter, the Experimental Group Being Given Help in a "Study Laboratory" During the Probation Quarter, and the Control Group Being Given no Special Help (37)

	Failing Quarter	Probation Quarter	Gain
Experimental	25	70	45
Control	27	34	7

Of further significance is Table 65, summarizing the situation for the two groups at the end of the quarter following the one in which the help was given (37). Evidently a considerably larger proportion of the students in the experimental (or helped) group were "saved" academically. Almost twice as many of the control group left college as did the experimental group; over three times as many were eliminated because of unsatisfactory work. And in spite of the fact that more of the very incapable students in the control group had left school (all remaining in the control group were above the 30th percentile on the intelligence test, whereas seven of the experimental group were below that ranking), more in the control group were back on probation, and the point-hour ratio was lower.[4] The "how to study" course apparently continued to help these students beyond the time when it was taken; there was transfer of this training to other courses and to later courses.

Table 65.—Differences Between a Group of Students Given Help in a Study Laboratory and a Control Group, the Quarter Following the Probation Quarter (37)

	Experimental Group	Control Group
Still in college	22	14
Number "out under rules"	3	11
Number back on probation	4[a]	6[a]
Number "out" for other reasons	6	6
Average number of hours taken	14	13.4
Average point-hour ratio	1.74	1.43

[a] These students are included in the number "still in college."

It must be further emphasized that the special course aided the students who took it in various ways not here brought out. They had been helped in their health problems and in their problems of emotional adjustment. They had been given new courage. It therefore seems not unreasonable to conclude that the total outlook on life of some of these young people had been bettered. Such attempts, not merely to teach arithmetic or algebra, but to help the student in every possible way to be a healthier, happier, and more efficient individual, may well be extremely significant for the education of the future.

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[4] Points are determined by calling A four points, B three, C two, D one, and E zero, and multiplying the number of points made in each course by the number of hours. The point-hour ratio is the number of points divided by the number of hours.

Attacks upon Special Phases of Study Method.—The above discussion has been concerned primarily with intensive individual aid given to failing students in an effort to rehabilitate them academically. But earlier in the chapter it was suggested that much might be done to make even good students better. One of the writers has found that many intellectually superior soldiers assigned to the Army Specialist Training Program seem to have "got by with their wits" in previous schooling but to have very shoddy study methods. Bright students doing only average work may need study laboratories as much as failing students—and gain more. Perhaps some time it may be possible so to train brilliant students as to make them prodigies of skill as regards effectiveness of work!

Contributions to efficiency are possible without such intensive (and instructionally expensive) laboratory classes, however. Illustrative of this fact are the results of an experiment in training in outlining in classes in English (42). One hundred and fifty pairs of students from four high schools were matched in ability, one in each pair receiving special lessons in outlining and the other having regular classwork in English. Standardized tests were then given in reading, ability to reason, and achievement in some other course they were taking. All of the differences were in favor of the group trained in outlining and most

TABLE 66.—Effects of Training in Outlining on Certain Other Abilities (42). Gains in Terms of Critical Ratios

	School A 12th Grade	School B 9th Grade	School C 9th Grade	School D 7th Grade
Reading score	6.6	6.2	5.0	4.7
Reading rate test	2.8	2.5	2.1	1.3
Reasoning test	3.6	5.5	2.3	2.0
Achievement in other subjects	3.1	3.3	2.5	5.0

of the differences are statistically significant (the critical ratio exceeds 3.0).

Another study indicated that it was possible to teach high school seniors that knowledge has a changing and dynamic rather than a static character and have it affect judgment of data presented in a new field (31). Such training in thinking may not be long-lived, however (3). In yet another investigation, seventh- and eighth-graders as well as some adults were tested for their ability to reason and analyze in interpreting Aesop's Fables. The training group received 12 short lessons using different material in which simple analyses, abstractions, and generalizations were made. After training they were again tested with other Aesop Fables and showed 32 per cent more gain than a control group, but a retest of some of them a year later showed most of their gain lost by that time. In an experiment more varied as to instructional methods, a course in demonstrative geometry was taught with emphasis on "how to think" and with a content which went far beyond the usual mathematical material. Tests showed greater than usual gain in knowledge of geometry, a significant gain over regular geometry classes on a "nature of proof" test, and also such evidences of value as frequent anecdotes of application brought to class by the pupils, enthusiasm on their part about the method, and highly favorable comments from parents (19). It is indeed unfortunate that such experiments are not more often tried in civics and physics and psychology as well as in English and geometry; until that is done, special merits as regards possibilities of such training must not be claimed for the last-mentioned subjects. That such gains are secured in any field—as is evidenced by the above data and similar matter in the preceding chapter—indicates that certain types of general training are possible.

Larger Implications of Research on Methods of Work: "Training to Think."—It is, then, possible to improve methods of study and of thinking, at least about topics in school, by certain types of training. Such results will not come of themselves; methods of instruction, and materials also, must be directed toward obtaining them. Results will be secured in proportion as that is done—and in proportion also as each pupil is intensively studied, all factors concerning his work considered, and help given him in making the applications desired. This is not the old complacent "formal discipline." It is a new type of mental training. It gives promise that, as the necessary research is done, there will emerge a real "training to think." It is a curious fact that little direct research on thinking about real problems in real situations has been done thus far. What is needed, the writers believe, is such a pragmatic research procedure as was described above, with special emphasis upon the methods of thinking and problem-solving used by outstandingly able adults. There are fascinating possibilities for research in this field. Presumably, methods of work and study and methods of thinking are closely related; the work on study methods has been stressed because the writers believe it to be, on the whole, the most significant line of approach to the practical problems of training to think. Moreover, the chapter on learning stressed learning of the problem-solving type. Under these circumstances any considerable separate discussion here of thinking seems unnecessary. However, in supplement to what has been said, certain points deserve brief mention.

In the first place, real effective thinking of the problem-solving type presupposes information regarding the topic under consideration, and information mastered to the point where there is facility in its use. One cannot really begin to play chess, for instance, until he has thoroughly learned the moves of the various pieces and knows something of the various openings. This should be obvious. But current emphasis on "training to think" has tended to neglect this fact, with a resultant superficiality both in public school teaching and in teacher training.

It may well be that there should be somewhat less emphasis on "thinking" and more on being well informed. Some expert chess players have commented that chess playing ability consists in large part of knowledge of the best sequence of moves and is not the feat of intellectual creativity which the casual observer often supposes.[5]

In the second place, original thinking actually proceeds by a process of trying and *doing;* it is an active and not a contemplative process. The way to work out a problem in chess is to play it through in various ways, not merely "study" it. Theorizing is a cheap substitute for real thinking; really effective thinking might be described as intelligent experimenting. Thinking is best furthered in school by an activity program.

In the third place, thinking is no mysterious, unanalyzable process. It should be possible to make job analyses of thinking. Furthermore, such analyses should be quite as valuable in locating bad techniques and hidden sources of error and improving training to think, as analyses of the way children do arithmetic have been illuminating and helpful in improving the teaching of that subject. The greatest immediate need is for empirical and practical analytical studies of thinking.

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[5] A fact not to be overlooked is this: Simply the possession of tool skills may be a helpful means of freeing a pupil's energies for the more creative aspects of his task. For instance, small youngsters have to devote so much of their attention and energy to the actual writing of words that length and quality of composition tend to suffer. In one experiment, over 6000 pupils in 27 elementary schools were provided with typewriters for their schoolwork, and their work was then compared to that of other pupils in similar schools who had to depend only on their own handwriting. The typewriting pupils produced more and longer compositions, especially in the early grades when handwriting is difficult, became better spellers, and in spite of less drill were able to write by hand as rapidly and well as those who only used handwriting (55).

Certainly the preceding section suggests that efficiency in "thinking" is determined not only by native ability and a fund of knowledge but also by work methods used. Habitual modes of attacking problems often set limits to efficiency; when more efficient work methods are *specifically* taught, increased efficiency is obtained. The use of headings in reading, already referred to several times, is one such work method. Analyses more directly of thinking should locate issues as to method in thinking of even more incisive value.[6]

The culmination of any process of original thinking is the "insight," the sudden discovery of the key to the problem. In part, this insight may be considered simply the culmination of the total process and coming as a result of that process. But everyone who has attempted original work or invention knows that there are times of heightened intellectual activity, when for some reason an insight is gained which seems impossible under ordinary circumstances. Such moments are the most exhilarating of all intellectual experiences. What are the circumstances and conditions which bring about these episodes of unusual mental effectiveness? In part the causes are undoubtedly physiological, and in part they are matters of motivation. Special circumstances, such as distraction or freedom from it, may play a part. The whole subject is obscure. But if the causes of these moments of exceptional mental clarity and originality *could* be found, they might offer fascinating suggestions for the furtherance of intellectual effectiveness.

TRANSFER TO OUT-OF-SCHOOL LIFE

In the chapter on appraisal, emphasis was put on "real-life" tests. In the chapter on permanence of learning it was stressed that mere ability to repeat what was learned in school was unimportant; the important question was as to whether what was learned affected what the pupil did—and not so much in school as out of school and in after-school life. Does what is learned in school transfer into the out-of-school world? For instance, does the usual high school course in chemistry affect a girl's preparation of meals or her practice of the household arts, now as helper to her mother or later in her own home? Does a course in American history or community civics affect what a boy reads in the newspaper or his talk at the corner store or his vote when he reaches voting age? Does a course in psychology really make any difference in the way a student deals with his own or an associate's emotional upsets or inefficiency in work, or disciplinary problems he meets in the first year of teaching? How can schooling be made to have more applicational transfer—have more and better effects in these respects? Here indeed is the most practical and most difficult problem in education.

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[6] Experimental evidence as to the importance of work skills in efficient performance in motor skills and puzzle solving indicates that such research as here suggested might be extremely fruitful (45, 50).

The scattered studies which follow indicate that the schools do, sometimes, have such effects. Sometimes the evidence is clear that they have failed miserably even in the accomplishment of clear and unmistakably desirable results. Clearly the problem needs much more explicit and constructive research attention than has yet been given to it.

Schooling and Vocation.—A natural first place to look for outcomes of schooling in adult life is in vocation; much evidence might be expected showing that education makes for success, and how education may be more closely related to vocation so that training in school will transfer more effectively into vocational use.

First of all, how successful are schools in assisting students to make a wise choice of vocation? Twenty years ago there was considerable discussion of the unrealistic nature of most young people's vocational interests; thus over 60 per cent of high school students desired to enter a profession, although less than 4 per cent of the population were thus employed. It might have been hoped that the schools would forthwith have seen to it that their pupils really learned about vocations so effectively that choices became more realistic.

Such unrealistic thinking has not been confined to callow high school youngsters. In the midst of the depression, 70 per cent of some 900 students in a big municipal university were endeavoring to enter the overcrowded professions of teaching, medicine, and law, though only 7 per cent had sufficient knowledge of the chosen field to be able to make systematic vocational plans. Choices were based on such factors as the student's estimate of the social prestige that the occupation carried (48).

Evidence suggesting that high school students are beginning to "learn better"—that courses on vocations and programs of guidance are somewhat correcting the overemphasis on professional and white-collar jobs—is presented in Chart 86. Over a period of several years the percentage of high school students in Minnesota who were choosing professional and white-collar jobs decreased (the number planning to go into other types of work increased), though the percentages for the last year were still far out of line with the number of vocational reality. The sober realities of the depression, rather than the efforts of the schools, may have caused part or all of the shift shown in the chart.

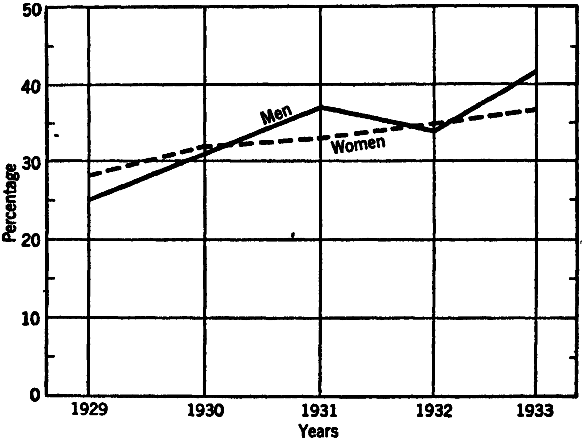

CHART 86.—Percentages of Minnesota high school seniors, men and women, planning to enter clerical, technical, routine commercial, skilled trades, and similar occupations from 1929 through 1933. (From F. K. Shuttleworth's *The Adolescent Period,* National Research Council, 1938; based on data in Williamson and Darley [53].)

That the methods used by schools to impart vocational information and to assist with vocational decisions may not be very effective is indicated by the lack of growth in vocational knowledge when this was a part of homeroom and civic courses for ninth-graders (28). Amusing is a finding that, in New York State, students from schools whose guidance facilities were noted as outstanding by the State Department of Education had the same vagueness in their plans as characterized those of pupils from other schools (35).

Clearly, even education specially directed toward problems of vocation does not transfer and get itself over into the clarification of ideas as regards the student's own vocational choice. However, there is evidence that, in certain fields at least, programs of vocational education are contributing appreciably to accomplishment. In certain high school classes in vocational agriculture, emphasis was given to the desirability of putting more land into legume crops (23). The question then was as to whether this actually was done on the farms of the students attending these classes; the efficiency of the instruction was measured by the extent to which farming practices in these communities changed. Table 67 shows that the instruction was effective. In fact, it reached beyond those attending the classes to their neighbors, as is shown by the smaller but nevertheless definite increase of acres in legumes on the farms of the control group (which were in these same communities), whereas in the state as a whole there was a slight decline of acreage thus planted. Presumably two special factors were important here. There was a definite motivation for application, because of the serious vocational interest of these students; and the close personal contact between the teacher of agriculture and the community meant that the instruction was almost literally carried to the farms.

TABLE 67.—Percentage of Tillable Land in Legumes Before and After Instruction of One Group, and at the Same Time Intervals for the Other [7]

	Instructed Group	Uninstructed Neighbors
First survey	11.0%	6.7%
Second survey	16.4%	8.1%
Increase	5.4%	1.4%
Net superiority of instructed group	4.0%	

Another study showed that the farms of students in vocational agriculture had more corn per acre, land in legumes, pork raised per sow, and livestock sold cooperatively than farms where practices were not thus guided: again neighbor farms were better than farms at a distance (7). Analogous evidence has been obtained of the application of instruction given in home economics classes (20). The instruction was concrete and practical; as projects the students planned the decoration of their rooms or meals for their own homes. The teachers' observation on home visits showed that the teaching was actually affecting the daily life of the students and their families.

What relations are there between amount of schooling or success in school and income? Here indeed is a problem too complex to be gone into in this volume. For instance, graduates with "A" average from Indianapolis high schools were found ten years later to be receiving weekly wages $8 to $10 higher than graduates with "C" average from the same schools (18). However, many complex factors are here involved. For instance, differences in innate capacities and in the socio-economic status of the family would probably affect both grades and later vocational success. It is thus impossible to analyze the effect of schooling on income.[8] Within single occupations, though, it is possible to extract some less dubious though still by no means clear-cut conclusions. For instance, one investigator (34) found that the incomes of farmers who had received vocational training were on the average $311 per annum greater than those who had had no such training. The two groups of farmers were equated for age, general ability as indicated by high school grades, size of farm and amount of capital invested, type of farming practiced, and type of community. The comparison thus appeared to be between the incomes of two groups of farmers who differed only in the amount of vocational training (though differences in motivation and ambition may have remained).

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[7] Adapted from (23).

Education thus transfers to vocation—sometimes. And if the successful instances above mentioned are examined, it will be noted that they are characterized by a form of "training for transfer." The vocational agriculture teachers helped their students actually plan what they should do on their farms. The teachers visited the farms, literally carrying education from class to field or farmyard. The vocational home economics teacher did not simply talk about home decoration or diet in general; she helped each girl plan the furnishings for her room or plan meals in terms of the needs of that home and the materials available. She visited the homes. The instruction in occupations and vocational guidance was not highly successful. But in a project carried on by a student in the writers' institution the class visited industrial plants, talked with both workers and employers, and in several instances arranged for trial summer jobs in the type of work being considered for after-graduation occupation. There was an attempt to give greater status and prestige to other than white-collar jobs. That is, again there was training for transfer. And a large proportion of this guidance did "stick" to some extent.

In teacher education there seems to be a widespread effort by analogous methods to increase applicational transfer. Thus in the writers' institution, even as early as the freshman year students help on playgrounds or in community houses, or occasionally aid a teacher in a classroom. Before and after these field experiences, their value is considered and problems there met are discussed. By this means, what the students learn about children in classes in psychology and education is verified and applied. These contacts have guidance value also. From these experiences some students are confirmed in their desire to teach, but others discover that they do not wish to do so.[9]

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[8] Because of such complexities, the once popular arguments for the value of education on the ground that college graduates earn more than people with only an eighth-grade education are naïve indeed. A discussion of the larger problem will be found in H. F. Clark, *Life Earnings,* Harper, 1937, 408 pp.

Schooling and Health.—Schools teach hygiene and have health programs. Do they make any difference as regards health? The following two studies are exceptional in the two respects that they sought an answer to that question and found some favorable outcomes. Rare indeed is the school in which the question is even asked.

The first investigation dealt with a simple problem—choice of food in a school cafeteria. The cafeteria had well-planned meals at a modest price. But the children chose too many desserts and saved for candy. Practical lessons in diet were given, with special reference to choice of lunch. Small first-graders donned tiny aprons, scrubbed their hands, and helped prepare a lunch with a salad. The wise spending of lunch money was considered in all classes. Occasionally, in the cafeteria, cards of commendation were placed on trays containing well-chosen lunches. Results were determined in terms of changes in sales of different food items in the cafeteria the semester before the program and the semester while it was in effect (it is unfortunate that data were not gathered also for the semester following).

As seen in Table 68, desirable changes came about. And as described above, again there was the explicit effort at teaching for transfer. The lessons on nutrition were as explicit in their reference to choice of lunch as the good Latin teacher was in her reference to English words. In

TABLE 68.—Change in Sales of a Cafeteria as a Result of a Health Education Program (43)

Food Item	Before Instruction	During Instruction	Per Cent of Change
Milk (half pints)	4,624	5,697	23
White bread sandwiches	10,064	8,704	−14
Brown bread sandwiches	1,020	2,212	117
Salads	680	901	33

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[9] See, for instance, A. J. Klein, and others, *Adventures in the Reconstruction of Education,* Ohio State University, Columbus, 1941, 290 pp.; Sidney L. Pressey, Social and useful college classes, *Sch. & Soc.,* 1942, *55,* 117–120.

terms of the commendation cards, the instruction went right down into the lunchroom.

Far more ambitious was a program in a small industrial city near Chicago in which for three years there was an extensive health education program in the schools including instruction in health, conferences with parents and teachers by a staff of child specialists, individual pupil interviews, periodic physical examinations by a pediatrician, and follow-up work by school nurses. The question was as to how much the children blessed with all this attention improved over pupils in four schools where there were only yearly physical examinations and a routine prescribed course in hygiene. Table 69 shows some of the results.

TABLE 69.—Increase in Percentage of Children Showing Good Health Ratings, in Connection with a Health Education Program [10]

	Full Program, 268 Children	Limited Program, 37 Children	No Program, 104 Children
Good general condition	34%	27%	11%
Good nutrition	25%	8%	6%
Firm muscles	29%	13%	20%

Clearly there were gains in physical condition. The detailed results showed yet more specific gains. Thus in one year there was a decline of 1.14 in the number of remedial defects in the first group, but only .50 in the control. The children in the first group improved more in diet and in sleep habits.

Although somewhat aside from consideration at this point, it may be mentioned that schoolwork also improved; after a two-year period the control group gained 26 months in educational age on the Stanford Achievement Test, whereas the experimental group gained 32 months, or 23 per cent more.

In this program there were many efforts at "applicational transfer." There was no resting the matter with instruction in class; health specialists, pediatricians, and school nurses literally carried the program to the parents and made it a central matter in the life of each child. The periodic health checks both guided and stimulated the program. The entire setup of the investigation acted as a general incentive to all involved, and there was influence upon school, child, and home as regards health measures and health attitudes. Such complexity is characteristic of a really vital educational situation.

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[10] Adapted from (24).

Schooling and Safety.—There is encouraging evidence that school safety programs have achieved great success. While the death rate of adults in traffic accidents increased 142 per cent from 1922 to 1939, the rate for children 5 to 14 years of age declined 31 per cent (1). Many factors obviously may have been operating here, but school safety programs seem to have played a major role. The introduction of a safety program into a school is invariably followed by a decrease in the accident death rate for children in the community.

For instance, in 1922 the schools of Kansas City had no safety program, and a child was killed on an average of every 26 days as a result of a street accident. Safety programs were then introduced, and in spite of increase in traffic, not a single child was killed on the streets in 1937.

> Safety programs should not be limited to traffic hazards. Playground accidents may be reduced through safety programs planned for this purpose (41). A vocational school decreased accidents in its shops 7 per cent by a safety program (26).

In general it may be said that safety education may achieve unmistakable results—may save lives. Successful safety programs have included systematic analysis of the problem and been based on these analyses. Accidents have been studied to find where they occurred and when and why (as from stealing rides or skating on the streets). And there have been multiple efforts at applicational transfer. Safety instruction has been tied in with many topics and with the situation where it is to be used. For example, problems of safety may be introduced into arithmetic; it is as easy and probably more instructive for a city child to learn how to multiply in terms of accidents than in terms of acres of land. Safety education may be integrated with pupil activities, giving opportunities for status as in membership in safety councils and service as street traffic officers. Teachers, children, parents, and police all work together and develop "welfare consciousness." And the children acquire training in citizenship that can go far beyond the immediate purpose for which the safety program was originally intended; safety education "transfers" into yet other situations and serves still wider purposes.

Transfer Problems in Social and Recreational Adjustment.—Repeatedly this volume has emphasized that schools should foster their pupils' social adjustment and develop desirable recreational interests. And much evidence bearing on these issues has been cited. But how much do social adjustments and interests thus fostered transfer to later life?

There is some evidence that modern socialized programs develop leadership which carries over into later schooling. Children going from a progressive elementary school into a secondary school were found to hold more offices there in class, club, and other student groups than pupils coming into this same high school from conventional elementary schools (25). An elaborate study of the outcomes of efforts to apply modern psychological and educational knowledge in thirty secondary schools yielded similar findings. In college, graduates of these schools participated more in almost all organized student groups and obtained more offices and other honors in such groups than students paired with them as to sex, age, race, socio-economic status, and scholastic aptitude but from conventional secondary schools.[11]

Chart 87 shows the differing extent to which various types of activities in secondary school carry over into college and into adult life. Clearly there are great differences between activities in the amount of carry-over. Unfortunately, activities showing most carry-through into adult life are among the least frequently participated in in secondary school.

The group shown in the chart were probably above average in socio-economic status. Other studies suggest less carry-through. Thus of 100 young women high school graduates in small Ohio communities who had not gone to college, 38 belonged to no organization whatever in the community, although when in high school everyone had belonged to some group and the average girl had belonged to three (36). Of a large group of out-of-school youth in Maryland between the ages of 16 and 24, only 21 per cent belonged to any club or similar organization (4).

There is a little evidence that participation in activities of certain types is related to later active citizenship. Boys in rural high schools who were most active in agricultural clubs tended to reduce their participation in activities on leaving school but yet belonged to more community organizations than other young men of similar background and abilities who were less active when in school. And 87 per cent of the first group voted in elections while only 68 per cent of the second group voted (46). Presumably a greater energy and out-goingness in the first group might have been the important factor throughout. But experience in high school activities was presumably at least a contributing factor, developing habits and skills as regards participation which transferred from school to community activities.

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[11] W. M. Aikin, *The Story of the Eight-Year Study*, Harper, 1942, 157 pp.

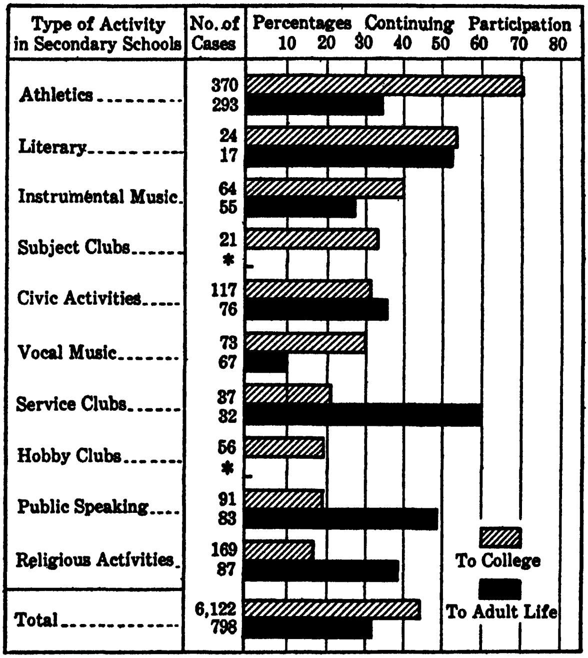

Chart 87.—Percentage of individuals carrying over participation in activities (1) from a private secondary school to college, and (2) from a private school to adult life. The column "No. of Cases" indicates the number carrying that activity in high school who went on to college or who were out of school at the time of the study; these two numbers do not agree because some students did not go to college and students still attending college had not as yet reached "adult life." (From Reavis and Van Dyke [38].)

How may such transfer as regards social adjustment and leisure interests be increased? Presumably one way (as in Latin) would be to find and stress common elements. Chart 87 shows only about 35 per cent carry-over of participation in athletics from secondary school to adult life. Perhaps there might be more stress in secondary school on such games as tennis and golf which are common sports also for adults, and less emphasis on games like football in which most adults cannot participate. The few who in secondary school do participate in literary and civic activities, service clubs, and public speaking show much carry-through into both college and adult life. A secondary school might therefore try to bring more of its pupils into such activities. There can be "teaching for transfer," as in civic activities of the school. Circumstances may be made to foster continuing interests and adjustment. Thus one school has its shops open certain evenings for hobby clubs to which alumni in the community as well as pupils and their parents belong. A school may have alumni groups which continue friendships and activities begun in school; one such class group with which one of the writers was acquainted seemed to have more vitality as an alumni than as an in-school organization—presumably because out-of-school youth often feel lost and in special need for a means for continuing social contacts. Acting as a community center, a school may have a program for adults which continues and adapts its educational, recreational, and social program to meet the needs of the whole community.

Vigorously illustrative of what may be done here is the program of adult and evening classes in the public schools of a prosperous Wisconsin suburban community. The prospectus includes courses on problems of war and peace, on the philosophy of democracy, on creative writing, on salesmanship, on "persuasive speech" for "the busy men and women who want the ability to get up in front of people and express themselves." For women there are courses on cookery, on crafts, and one entitled "How well do you know your pre-school child?" There are courses on hobbies like photography, and one devoted entirely to the making of duck decoys. A chorus and a symphonette, evenings of bridge and dancing, times for volley ball, badminton, and swimming, programs of exercise for older people provide varied social recreation. The community is proud of the fact that it has more enrollments in its evening classes for adults than it does in its day classes for children. The total program is an explicit attempt to carry over from schooling into adult life sundry educational values—physical, recreational, social, intellectual.

It may be noticed that though the above program stresses leisure interests it is by no means confined to them. Perhaps the schools of the future will less often teach youth what will be needed in adult life, and more often teach in adult life for needs as they arise. A course on salesmanship probably means more to a woman in a selling job than to a 16-year-old girl. There was a course entitled "an invitation to reading" which might serve as a corrective to the failure of many if not most school and college courses on literature to show any applicational transfer. Thus about 40 per cent of a group of alumni of two famous eastern universities indicated that their study of literature in school had had but little or even an adverse effect on their later adult reading (11). The great majority of a group of adults in Brooklyn were found to prefer titles such as "Joy Ride" and "Blonde Interlude"; less than 2 per cent read matter considered good by their former teachers (52). About a hundred pulp magazines are sold for one of the first-class magazines (29). Army recruits read little non-fiction, and the blame has been placed on distaste for non-fictional reading developed in school (15). In fact, literacy may be lost. One of the writers, working in an induction station for selective service, has observed many persons with six to eight years of schooling who were no longer able to read. During the years since school, having little interest in reading (and not much ability), they forgot how. The prosperous suburb above mentioned would probably have no such cases. But to schools in poorer districts they present a major problem as regards permanence and applicational transfer of schooling.

Transfer from School to Community Life.—From the above material it is natural to go to the still larger issue of transfer of schooling even more widely to community life. Carefully to investigate issues thus broad is indeed difficult. But a more distressing difficulty is this: that such results seem not obtained or even sought in most schools. The schools attempt to get children to verbalize in class about history or hygiene or literature. They do not think of the school as having any effect, directly and immediately and obviously, upon local government or community health or home reading. But the school *should* have such effects. Its programs should be planned so that such effects are obtained. An early and "classical" study may be here mentioned (12). And the mention may begin with a little episode in that school—an episode many years ago but still vivid in its realism and significant in its outcomes.

From a country school in Missouri, one Monday morning years ago, Mary and Johnny Smith were absent. Tommy, a neighbor, reported both ill with typhoid. Forthwith the class discussed possible causes of this disease. It visited the Smith home to see what causes might have been operative, visited another very good home to observe better conditions especially of fly control, sent a report to Mr. Smith suggesting ways that the flies about his home might be dealt with, made a fly trap and garbage-can container for the Smiths in the school shop. They also figured materials and cost for screening the Smith home and wrote the state university for more information about typhoid. The class next decided to make a health survey of the community. Some member of the class visited every home and obtained information about illnesses there.

Shortly thereafter, a mother visited the school, saw the charts summarizing this survey, and suggested a community meeting where all the parents might see and discuss the results. Accordingly the little class had this meeting, which was well attended and aroused great interest.

For four years the work in this school consisted of such episodes. The local ne'er-do-well stole from the hardware store. The class attended the trial and later visited the penitentiary where that unfortunate gentleman was then in residence and talked with him there. The pupils planned a community fair. In short, they were very much a part of the life of the community. They did not study reading or writing or arithmetic, but they did read about typhoid and community health and the causes and treatment of crime. They wrote to the state university for information about typhoid, wrote reports about disease and community problems, gave papers at community gatherings. They figured the needs and cost to screen the Smith home, and the dimensions and material needed for the garbage container. Moreover, the community came to the school. Not only were there other meetings such as those above mentioned. There was a little practical laboratory in the school where the farmers could find farm journals, test seed corn and milk, or otherwise obtain help.

How about the results? First of all, it should be noted that although the school subjects were not formally taught, on formal tests on them this experimental school was 38 per cent over conventional schools in the neighborhood. From reading about typhoid and writing letters to secure information and figuring the cost of Mr. Smith's screens (and other similar practical undertakings) they learned to read and figure better than in conventional classes. But most important here is the way in which the school affected not only what the children did outside of school and in vacation but also the attitudes and activities of the entire community. Before and after the four-year experiment the investigator went about the community, finding what reading was done in the homes, how many people attended community meetings, what the vote was for school levies. And he did this both in the district in which the experimental school was located and in two other districts that had conventional schools. Chart 88 shows that there was indeed an applicational transfer, and an interrelation as regards the community and the experimental school as compared with the controls.

In recent years more and more schools are attempting thus to contribute to community life. The accounts of these programs make fascinating reading. For instance, the contrast between the usual academic curriculum and the needs of people in the South has led to attempts there to meet local

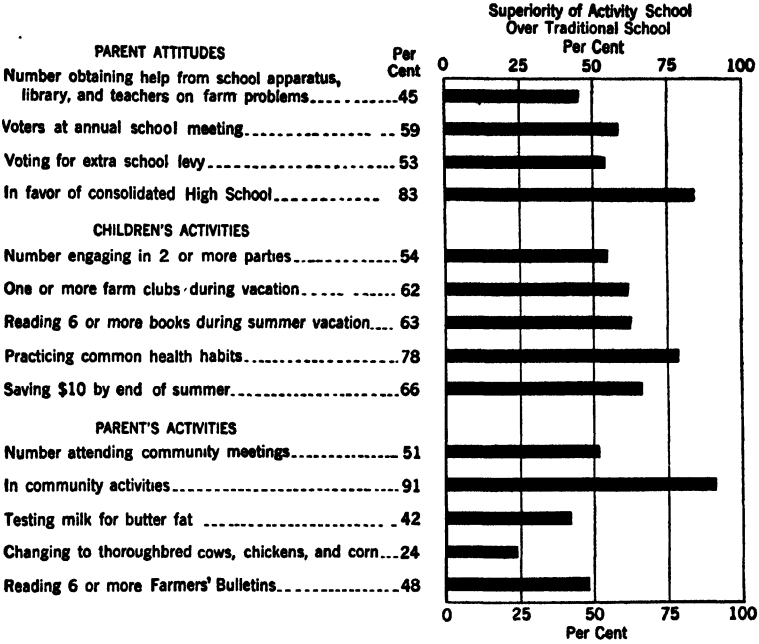

CHART 88.—Changes in out-of-school living of pupils from an activity school and of their parents, compared to the living of pupils from traditional schools and their parents, in the same community, over a four-year period. (Data from Collings [12].)

needs. Pupils study about and work on local health problems, diet, housing. As a result, the communities are benefited and the pupils learn much. The students of one Georgia high school operate a cooperative market where rural students can sell farm products; they also run a non-profit cannery. Other projects have dealt with health problems in the community and means of beautifying the surroundings. In South Dakota, the teachers of the Oglala Sioux, aware that few students ever went to college and that most of them remained on the reservation, set about adapting the curriculum to these conditions. The adolescent boys are given an opportunity to work with the cattle on the range for one month of the school year; there they are taught many practical things and on their return to school carry on activities arising from this experience. "Every class from the first to the twelfth has desirable and necessary experiences in the care of livestock, the growing of feed, marketing, and care of livestock products." While in school, students are aided in acquiring stock, each member of the latest graduating class owning an average of fifteen head. During the senior year, long-time plans are made for managing the home range and contact is made with the county agent. An outgrowth in the community has been an 850 per cent increase in Oglala-owned cattle. Other projects have emphasized the history of the tribe and their cultural contributions. As a result, greater pride and self-confidence have made the Indian more resourceful (33). In Tennessee a school has arranged a community-oriented program from the kindergarten through adult education. The students maintained a community garden from which they supplied the school cafeteria and the Norris Store. Senior high school students took up the elimination of malaria from their district. In such a program the students learn a great deal and serve the community, and the adults become interested participants. Thus a monthly report showed adults using 2237 books from the school library, 2973 attending recreational meetings at the school, and 617 attending workshop meetings (27).

It will be recognized that such real life situations not only give applicational transfer. They fulfill the requirements of a good learning situation described in Chapter XIII. They may be so planned as most fully to meet the needs and interests of each pupil. They favor (in fact, require) learning which is active and social, has recognized goals and seen progress—learning which is most sound. As suggested above, such learning is also most practical. In fact (as indicated by the votes for the school levy in the Missouri community) it may also be most politic!

PROBLEMS OF APPLICATIONAL TRANSFER

As the material of this chapter is looked back over, what seem to be the outstanding issues? In the first place, it seems clear that there is need for empirical and analytical study and analysis of the situations to which the school hopes, by transfer from itself, to make a contribution. Even in so familiar a matter as methods of study, a priori analyses and the hunches of experienced teachers were found inadequate. To get hold of these elusive problems one must reach right into the situations where they are and study them carefully. Really, how *do* people study? Actually, what study methods *do* work well? Where the application is to out-of-school life, studies of a job-analysis type are even more important. A good safety campaign should begin with the study of the nature and causes of accidents and the ways children behave at a crossroads and the extent to which devices for safety education do make clear this hazard and do affect child behavior. A study of problems of vocational guidance must be sufficiently empirical and sufficiently wise in the ways of human beings to see how inadequate by itself is vocational information—how necessary it is to appreciate and do something about the factors of vocational prestige and family status and other factors of a like nature, many of them not to be dealt with directly but all to be reckoned with if the school is to affect vocational choice. The school in the rural community did get its transfer from school to community because it knew the farmer's problems about seed corn, the mother's problems of child health, and the satisfaction both parents and children could obtain from common undertakings in which all found interest and pride.

In the second place, there must be not only knowledge of what is to be applied, but a carrying of it over into the applying situation. The preceding chapter showed how if a teacher wished study of Latin words to increase English vocabulary she must almost literally take John by the arm and say, "Look, John! Here is this Latin word *urbs,* and this English word *urban,* and they both have to do with cities." But if in such an obvious matter such steps must be taken, how much more obvious should it be that to get John to see the relation between what he reads about housing and the housing problem in his town, he needs to be taken out and made to look at his town's slums? To make Mary relate discussions of home furnishings functionally to her own home, it may be desirable for the teacher to visit that home and help Mary fix her room. To help Bill feed his pigs better the teacher of vocational agriculture will almost surely wish not only to have Bill read a book on this matter but to go out and see his pigs and go over with him the way he feeds and cares for them.

Finally, as with the results of transfer in the school subjects (and, in fact, as always in education or in applied psychology), it is important systematically and objectively to appraise and find out what really is accomplished. Does this youngster who has been taught how to study really do better in his schoolwork; does this safety campaign reduce accidents; do the pigs gain in weight? These are the realistic, straightforward, sensible evaluations which applicational transfer calls for. It might be said that the major purpose of this chapter is to get the teacher to think in terms of such real life outcomes—and indeed to get herself and the school lined up with the community in accomplishing purposes common to all.

SUMMARY

This chapter thus summarizes the third and most important type of outcome to be hoped for from learning in school. Two chapters ago it was pointed out that if asked some months afterward what he had learned in a class, the average pupil could usually recall relatively little. That is, the permanence of learning as shown by direct recall is relatively small. The preceding chapter showed that what is learned in one school subject may transfer to another subject. Thus studying Latin may increase English vocabulary. But such transfer gains were for the most part slight as compared with results from efforts to learn a matter directly. The present chapter has dealt with a third problem: Does what is learned in school affect what a student actually does, both now and in later adult life?

1. Two issues are here considered. In the first place, the question is as to what can be done to improve methods of work. It was found that by empirically investigating as to which methods are best, by seeing to it that these methods are tried in situations where they are to be used, and by adjusting throughout to the needs of each individual, improvements in methods of work can demonstrably be brought about. And it is suggested that by such painstaking approach, even such subtle skills as those in methods of thinking and reasoning may be improved.

2. There are multiple problems of applicational transfer from school to out-of-school life. The school should increase the wisdom of vocational choice and efficiency in vocation. It should improve child health and decrease accidents. It should improve social and recreational adjustment in adult life as well as in youth. There is scattered evidence that all these things can be done. There is every reason to suggest that they can be done much better.

3. In fact, it is suggested in closing that applicational transfer is the most neglected practical problem in the psychology of learning. The explicit recognition of this problem and systematic study of it should make for great improvement in the efficiency of the schools and coordinate admirably with modern philosophies of education.

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CHAPTER XIX

A Foreword to the Education of the Future

This survey of educational psychology is now finished. However, one hazardous but fascinating task remains. It seems worth while to glance back briefly over the material so that it may be seen in perspective, and then, with that perspective, to try to obtain some glimpse of the future.[1]

The glance backward shows that in the last few years there has been and is continuing a tremendous, confusing, multifarious investigatory activity in the field. Much of this work is still too close to permit seeing above the detail, that the more significant may be distinguished from the less. However, this *is* clear, that in the scientific study of its problems lies the hope of education.

It is also clear that, meager as is the information on most topics, educational progress in the average school has lagged so far behind research as to make educational practice almost a thing apart from educational knowledge. Educational practices are often perverse; like the bloodletting of the medicos of 150 years ago, they sap the intellectual vitality of the pupils and develop bad habits of thinking and bad attitudes, rather than good. To make some contribution toward bringing together scientific knowledge and educational practice has been one purpose of this book.

What specifically may be hoped for as the outstanding and distinctive advances in the educational future? The following prophecies are ventured.

PROBLEMS OF EMOTIONAL DEVELOPMENT, AND EDUCATION FOR HAPPINESS

First of all, it is suggested that the education of the future will have as a major purpose the fostering of mental health. In the chapter on emotional development it was emphasized that serious emotional distress is very common in childhood and adolescence, and that such difficulties may have exceedingly unfortunate consequences, even affecting both intellect and physique. It was also pointed out that the origins of these distresses were essentially simple and possible to deal with when understood, and that in healthy emotional development there was a potential source of invigoration of both physical and mental activities as yet very inadequately drawn upon. The writer ventures as his first prophecy that education will come to consider the furthering of child happiness and a richer emotional life to be not a sentimental and impossible, but a practical and obtainable, major objective. The schools will work systematically, in cooperation with other social agencies, to prevent maladjustment, and to make childhood and youth the gloriously zestful and happy periods of life they should be. A major contribution to physical health should be the result. Intellectual efficiency should be increased. A large part of adult unhappiness should be avoided. In short, the whole tone and character of existence may be changed.

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[1] The author of this chapter (S. L. Pressey) has found it an interesting experience, now in 1943, to review the prophecies he ventured in '33. That seems so long ago. But he has the conceit to believe that they are in large part being vindicated. Mostly he sticks to them in this revision, but has added or modified here and there—and ventures to prophesy again.

In recent years research has stressed especially two related topics central for this development: the subtle, intimate, intricate life of the emotions, and the subtlety, intimacy, and hidden intricacy of social interrelationships. Work along these two lines seems about to come together to cause a broadening of the concept of education to include educational responsibility for social and emotional as well as intellectual growth. It is possible to hope, even in these times, that there may be for young people in the near future prevention of much of the emotional strain now common, and a new joyful zest in living.

EDUCATIONAL ENGINEERING AND THE NEW COMPETENCY IN EDUCATION

In considering interests and incentives it was pointed out that if a learner is kept informed of his progress and his goal, his efforts are greatly stimulated. In fact, so responsive to the total rich environment of the modern world are the interests of an intelligent pupil that, within the limits of a reasonable curriculum, knowledge of the goal and knowledge that there is progress may suffice to maintain vigorous learning. If knowledge of progress is acted upon, there must be adjustment to individual differences; and with adequate knowledge, adjustment inevitably comes about in large measure. Research regarding pupil difficulties provides a ready means for the diagnosis and remedy of such difficulties. Furthermore, all these materials and methods can be organized in a form which provides largely for pupil self-direction in learning, and can be further organized for a still more effective cooperative attack upon learning problems. By such means the education of the future can be made not a perfunctory time-serving, but a series of gloriously stimulating experiences in the conquest of new knowledge and understanding. By such means educational gains can be conserved through periodic inventories determining the permanence of desirable knowledge and showing just where and how review efforts should be applied.

Two recent developments (recent at least in current emphasis upon them) here seem of importance. Means of appraisal and evaluation in learning have, as never before, reached wide. It is increasingly possible to measure not simply ability in arithmetic but ability in thinking and the consistency of a person's beliefs, or the consistency and trend of his character. Yet more important is this—at long last, appraisal has really escaped from the school and is finding out what children do in their home or neighborhood and what they become after they have left school. It is possible to discover whether a course in home decoration results in a more attractive home, a course in English literature improves the home library, or a course in psychology results in greater sanity twenty years after. When such facts are found, then one can determine what he should do to bring desirable outcomes in these respects.

Fundamental to such educational advance is this: scientifically constructed materials for learning and for appraisal and diagnosis, in a form so as to be ready-at-hand and constantly-used conveniences for both teacher *and* pupil, should be universally available. There must be an "industrial revolution" in education, in which educational science and the ingenuity of educational technology combine to modernize the grossly inefficient and clumsy procedures of conventional education. Work in the schools of the future will be marvelously though simply organized, so as to adjust almost automatically to individual differences and the characteristics of the learning process. There will be many labor-saving schemes and devices, and even machines—not at all for the mechanizing of education, but for the freeing of teacher and pupil from educational drudgery and incompetence. Teachers and pupils will cooperate in fascinating efforts to develop further conveniences. The future school will, in consequence, be as much more efficient than the schools of the past as modern industry is more productive than the handicraft of 200 years ago. Will all this make education an industrialized monster, neglectful of human values? That it can never do;

the purposes of education would prevent it—and a major service of such devices would be to guide educational effort with ever-increasing clearness and adequacy toward the accomplishment of those purposes.

As the true complexity of educational problems is more understood, the need for ways more easily to handle these yet larger problems becomes greater. So increasingly it will be necessary (and because more necessary, more likely) that special devices and mechanical aids and an industrial revolution in education will come about.

Another possible source of great help must be mentioned here. People best learn by doing. They learn best of all when they have fullest appreciation of the worth and need of that doing. The war (and before that such programs as NYA) brought experience in work to many young people earlier and in more incisive form than a few years before, and that experience has been found educationally of worth. The value of apprentice experience in professional training has long been recognized. Engineers have their summer field work, and medical students their internships. Surely students preparing to teach might help in various ways in the work of a teacher-training institution. Perhaps with the more mature students of a post-war period, their cooperation in the work of a college may be found a major source of help for it and also a major stimulus to their own interests and education. Perhaps increasingly pupils in secondary and even elementary school may participate and help in the work of the school.

Furthermore, the needs of the post-war world and increasing knowledge of applicational transfer should make the schools more effective in the community. Both schools and community may find in young people a great resource, the wise use of which is not exploitation, but the soundest of educational practice.

THE NEW GENERAL TRAINING AND INTELLECTUAL PROGRESS

In the preceding two chapters it was emphasized that a new general training was emerging from the earlier critical work on transfer. Attitudes and character traits can be measured, and the factors contributing to their development investigated. Effective methods of work and of thinking can be located and, *once they have been found,* educational procedures can be so formulated as to develop such methods. Real, experimentally founded programs of character education, of aesthetic development, of growth of ideals and social understanding, and of training in thinking will be possible. There will be a splendid new mental discipline, a remaking of intelligence. And since all this will be social, education will take its rightful place as a major means for social progress.

In recent years there are multiple evidences that certain of these developments are taking place. Investigation regarding propaganda and studies of morale have shown, in a national crisis, the importance of these subtle problems. In the crisis, ways have been improvised for dealing with some of them. The need for better ways has been more clearly seen. In the new close-knit world of the future, stupid or warped thinking will become increasingly dangerous and clear thinking will become increasingly necessary. A real training to think, a real training of the mind, may come at last.

THE HOPE FOR A NEW PSYCHOLOGY

All such developments both make for and presuppose a new psychology—dynamic, social, humanized. Educational research will presumably make important contributions to this new psychology; it is only natural that such a development should emerge primarily from the various fields of "applied psychology," since in those fields research comes most fully in contact with the total richness of psychological reality.

It has been remarked that psychology is still in the "pre-Darwinian" stage; it still lacks basic concepts which should unify, organize, and interpret the entire field. In a striking passage at the close of his *History of Experimental Psychology,* Boring has remarked that psychology has not yet had its great man. The prediction is here ventured that when this great man comes, his contribution will lie not in the discovery of some obtruse principle or complicated formula but rather in a vision that will give facts which are generally known a more comprehensive interpretation. That interpretation may be relatively simple and, once known, it may seem obvious. Its distinctive characteristic may well be that it reaches beyond conventional psychology to comprehend the fundamentals of human experience in a scientific but deeply sympathetic understanding.

If this new understanding does come, the profoundness of its total influence is incapable of exaggeration. Nor is it possible to exaggerate the importance of such a new education as has been suggested. The next generation may look back upon the education of the present as we now look back upon the medicine of a hundred years ago. What the new education will be or the new psychology which will pervade it, we do not now know. But there are multiple signs which portend the beginning of a new epoch in both education and psychology.

Though the nature of the new psychology can still not be clearly seen, one can venture certain likelihoods. As after the last war, it may certainly be expected that psychology will again change. It seems highly likely that it will change not simply in detail but even more as to what it considers itself fundamentally to be. The new psychology (it is suggested) will have for its basic orientation not physiology but social psychology. It will stress those complex interrelations between the society in which an individual develops and the biological urges within him which have been, after all, the real major theme of this volume.

THE NEW EDUCATION AND THE NEW TEACHER

It should be obvious that the new education will demand a new type of teacher. The teacher of the future must have a profound understanding of human nature, be conversant with a fascinating equipment of educational instruments and procedures, and have wide acquaintance with the affairs of the world, because education must touch them all. Teaching will be the most stimulating of all the professions. It must be regarded as a true profession, requiring extended preparation, continuing study, and devotion. To inspire the reader with some vision of the new education, enlist his enthusiasm in the furthering of such developments, and bring him to see teaching as *the* profession with the greatest potentialities for the future—these have throughout been the major purposes of this volume.

Educational progress in the last few years and the events of these years make even clearer the need for teachers with a broader vision than in the past. As the school reaches out into the community and the teacher necessarily goes out into it, and as adult education becomes increasingly important, so must the teacher increasingly become a well-integrated, wise community leader. If she is to have these traits she must better understand herself. And she must better understand the total interrelations of the human problems with which she deals. She may well find that she has a yet larger and indeed frightening responsibility, in the post-war world. The tasks of education in the immediate future are of central importance. To reeducate the youth of some countries, and so to inform and guide the thinking of the people of this country that they can meet the problems of the future—there are no tasks more important or more difficult. In the famous phrase of H. G. Wells, quoted in the first chapter of this volume, the future may well be "a race between education and catastrophe."

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